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**During the Year ending 31st December 1897.**

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TOGETHER WITH

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UPON

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# Summary of Accidents and Casualties which have been reported to the Board of Trade as having occurred upon the Railways in the United Kingdom during the Twelve Months ending 31st December 1897.

---

## I.—ACCIDENTS TO TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c.

Accidents to trains, rolling-stock, permanent-way, &c. caused the death of 34 persons and injury to 476 persons, viz.: –

| — | Total for the Year 1897. | | *Total for the Year 1896.* | |
|---|---|---|---|---|
| | Killed. | Injured. | *Killed.* | *Injured.* |
| Passengers ... ... ... ... ... ... ... | 18 | 324 | *5* | *388* |
| Servants of Companies .. .. ... ... ... | 9 | 140 | *3* | *153* |
| Other Persons ... ... ... ... ... ... ... | 7 | 12 | — | *8* |
| Total ... ... ... ... ... | 34 | 476 | *8* | *549* |

Of the 34 persons killed and 476 injured, 2 passengers and 1 servant were killed and 140 passengers and 23 servants were injured in collisions between passenger trains or parts of passenger trains; 52 passengers and 23 servants were injured in collisions between passenger trains and goods or mineral trains, light engines, or other moving vehicles; 1 servant and 1 other person were killed, and 38 servants were injured in collisions between goods trains, light engines, or other moving vehicles; 1 passenger was injured in a collision between a train and vehicles standing foul of the line; 32 passengers and 2 servants were injured in collisions between trains and buffer-stops or vehicles at rest, caused by trains running into stations at too high a speed; 2 passengers were killed and 10 passengers and 11 servants were injured by collisions between trains and buffer-stops, &c., from causes other than the above; 13 passengers and 2 servants were killed and 86 passengers and 5 servants were injured by passenger trains or parts of passenger trains leaving the rails; 1 servant was killed and 9 were injured by goods trains or parts of goods trains, light engines, &c., leaving the rails; 1 servant and 6 other persons were killed, and 2 servants and 12 other persons were injured by trains running through gates at level-crossings or into other obstacles; 7 servants were injured through the bursting of boilers or tubes, &c. of engines; 2 servants were killed and 17 injured by accidents arising from the failure of rolling-stock (wheels, tyres, axles, &c.); 1 servant was killed and 1 injured by accidents arising from failure of the permanent-way (tunnels, bridges, rails, &c.) and 1 passenger was killed, and 3 passengers and 2 servants were injured in other accidents.

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Altogether, including accidents in which no personal injury was sustained, there were reported during the twelve months, 31 collisions between passenger trains or parts of passenger trains; 39 collisions between passenger trains and goods or mineral trains, light engines, &c.; 34 collisions between goods trains, parts of goods trains, light engines, &c.; 1 collision between a train and vehicles standing foul of the line; 23 collisions between trains and buffer-stops, &c., of which 12 were caused by trains running into stations or sidings at too high a speed, and 11 were due to other causes; 40 cases of passenger trains or parts of passenger trains leaving the rails; 20 cases of goods trains, &c. or parts of goods trains leaving the rails; 255 cases of trains running through gates at level-crossings or into other obstructions*; 11 cases of fire in trains or vehicles; and 5 cases coming under the heading of miscellaneous accidents to trains.

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* During the twelve months, 51 horses, 7 donkeys, 62 beasts and cows, 133 sheep, 9 pigs, 4 goats, and 1 dog were run over and killed; and 7 horses, 5 beasts, 1 donkey, and 1 goat were injured.

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In addition to the above the following accidents to, and failures of, rolling-stock and permanent-way were reported, viz. :—7 cases of the bursting of boilers, tubes, &c. of engines, 9 cases of the failure of machinery, springs, &c. of engines; 358 failures of tyres; 190 failures of axles; 18 failures of couplings; 1 case of the failure of a bridge; 262 failures of rails; 46 cases of flooding of the permanent-way; 25 slips in cuttings or embankments; 10 fires at stations; and 2 miscellaneous accidents.

Of the 358 tyres which failed, 20 were engine-tyres, 4 were tender-tyres, 7 were coach-tyres, 35 were van-tyres, and 292 were waggon-tyres; of the waggons, 239 belonged to owners other than the Railway Companies; 240 tyres were made of iron and 118 of steel, 3 of the tyres were fastened to the wheels by Gibson's patent method, one of which left the wheel when it failed; 7 by Mansell's patent method, 2 of which left their wheels when they failed; 268 by bolts or rivets, 4 of which left their wheels when they failed; 80 by other methods, 7 of which left their wheels when they failed; 27 tyres broke at bolt or screw holes, 1 in the weld, 89 in the solid, and 241 split longitudinally or bulged.

Of the 190 axles which failed, 109 were engine axles, viz., 97 crank or driving, and 12 leading or trailing, 23 were tender axles; 4 were coach axles; and 53 were waggon axles; of the waggons, 32 belonged to owners other than the Railway Companies. Of the 97 crank or driving axles, 37 were made of iron and 60 of steel. The average mileage of 36 crank or driving axles made of iron was 266,496 miles, and of 59 crank or driving axles made of steel 249,960 miles.

Of the 262 rails which broke, 89 were double-headed, 135 were single-headed, and 38 were Vignoles' rails; of the double-headed rails 52 had been turned; 5 rails were made of iron and 257 of steel.

## II.—ACCIDENTS TO PASSENGERS FROM CAUSES OTHER THAN ACCIDENTS TO TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c., INCLUDING ACCIDENTS FROM THEIR OWN WANT OF CAUTION OR MISCONDUCT; ACCIDENTS TO PERSONS PASSING OVER LEVEL-CROSSINGS; TRESPASSERS; AND OTHERS.

Of the 630 persons killed and 1,637 injured under this heading, 115 of the killed and 1,315 of the injured were passengers. Of these, 34 were killed and 120 injured by falling between carriages and platforms, viz., 20 killed and 59 injured when getting into, and 14 killed and 61 injured when alighting from, trains; 11 were killed and 742 injured by falling on to platforms, ballast, &c., viz., 81 injured when getting into, and 11 killed and 661 injured when alighting from, trains; 14 were killed and 6 injured by falling off platforms and being struck or run over by trains; 23 were killed and 11 injured whilst passing over the line at stations, viz., 12 killed and 6 injured at stations where there is a subway or footbridge, and 11 killed and 5 injured at stations where there is neither a subway nor footbridge; 234 were injured by the closing of carriage doors; 18 were killed and 62 injured by falling out of carriages during the travelling of trains; and 15 were killed and 140 injured from other causes connected with the movement of trains or railway vehicles. 80 persons were killed and 25 injured whilst passing over railways at level-crossings, viz., 41 killed and 18 injured at public level-crossings, 24 killed and 6 injured at occupation-crossings, and 15 killed and 1 injured at foot-crossings. 255 persons were killed and 142 injured when trespassing on the railways; 132 persons committed suicide on railways, and 18 persons were injured while apparently attempting to commit suicide; 36 persons were killed and 122 injured while on business at stations and sidings; and of other persons not specifically classed, 12 were killed and 15 injured.

## III.—ACCIDENTS TO SERVANTS IN THE EMPLOY OF RAILWAY COMPANIES OR CONTRACTORS, CAUSED BY THE TRAVELLING OF TRAINS OR THE MOVEMENT OF VEHICLES USED EXCLUSIVELY UPON RAILWAYS.

During the twelve months there were 501 servants of companies or contractors reported as having been killed and 3,989 injured, in addition to those included in Division I. 19 were killed and 492 injured whilst coupling or uncoupling vehicles;

3 were killed and 27 injured by coming in contact, whilst riding on vehicles during shunting, with other vehicles, &c. standing on adjacent lines; 13 were killed and 90 injured whilst passing over or standing upon buffers during shunting; 8 were killed and 410 injured in getting on or off, or by falling off, engines, waggons, &c., during shunting; 4 were killed and 328 injured whilst braking, spragging, or chocking wheels; 3 were killed and 79 injured whilst attending to ground-points; 5 were killed and 368 injured whilst moving vehicles by capstans, turntables, props, &c. during shunting; and 42 were killed and 606 injured by various other accidents during shunting operations. 10 were killed and 59 injured by falling off engines, &c. during the travelling of trains; 8 were killed and 173 injured whilst getting on or off engines, vans, &c. during the travelling of trains; 8 were killed and 72 injured by coming in contact with over-bridges or erections on the sides of the line during the travelling of trains; 2 were killed and 365 injured whilst attending to, or by the failure of, machinery, &c. of engines in steam; 104 were killed and 196 injured whilst working on the permanent-way, sidings, &c.; 8 were killed and 6 injured whilst attending to gates at level-crossings; 119 were killed and 214 injured whilst walking, crossing, or standing on the line on duty, of whom 99 were killed and 187 injured in and about stations and 20 were killed and 27 injured at other parts of the line; 27 were killed and 96 injured by being caught between vehicles; 21 were killed and 62 injured by falling or being caught between trains and platforms, walls, &c.; 71 were killed and 57 injured whilst walking, &c. on the line on the way home or to work; and 26 were killed and 289 injured from various other causes.

Altogether, the number of persons killed and injured on railways in the United Kingdom in the course of public traffic, during the Twelve Months ending 31st December 1897, as reported to the Board of Trade, was as follows:—

| — | Total for the Year 1897. | | *Total for the Year 1896.* | | Increase. | | Decrease. | |
|---|---|---|---|---|---|---|---|---|
| | Killed. | Injured. | *Killed.* | *Injured.* | Killed. | Injured. | Killed. | Injured. |
| **Passengers:** | | | | | | | | |
| **From accidents to trains, rolling-stock, permanent-way, &c.** | 18 | 324 | *5* | *388* | 13 | — | — | 64 |
| **By accidents from other causes ...** | 115 | 1,315 | *88* | *1,198* | 27 | 117 | — | — |
| **Servants of companies or contractors:*** | | | | | | | | |
| **From accidents to trains, rolling-stock, permanent-way, &c.** | 9 | 140 | *3* | *153* | 6 | — | — | 13 |
| **By accidents from other causes ...** | 501 | 3,989 | *444* | *3,833* | 57 | 156 | — | — |
| **Other Persons:** | | | | | | | | |
| **From accidents to trains, &c. ...** | 7 | 12 | — | *8* | 7 | 4 | — | — |
| **Persons passing over railways at level-crossings.** | 80 | 25 | *51* | *27* | 29 | — | — | 2 |
| **Trespassers (including suicides) ...** | 387 | 160 | *375* | *137* | 12 | 23 | — | — |
| **Persons on business at stations, &c. and other persons not coming in above classifications.** | 48 | 137 | *42* | *133* | 6 | 4 | — | — |
| Total ... ... ... | 1,165 | 6,102 | *1,008* | *5,877* | 157 | 225 | — | — |

*** Of contractors' servants 18 were killed and 25 injured.**

In addition to the above, the Railway Companies have reported to the Board of Trade, in pursuance of the 6th Section of the Regulation of Railways Act, 1871, the following accidents which occurred upon their premises, but in which the movement of vehicles used exclusively upon railways was not concerned, namely:—2 passengers killed and 286 injured whilst ascending or descending steps at stations; 62 injured by being struck by barrows, falling over packages, &c. on station platforms; 87 injured by falling off platforms; and 151 injured from other causes. Of servants of companies or contractors, 7 were killed, and 2,252 injured whilst loading, unloading, or sheeting waggons; 2 killed and 876 injured whilst moving or carrying goods in stations, sheds, &c.; 241 injured whilst working at cranes or capstans; 765 injured by the falling of waggon-doors, lamps, bales of goods, &c.; 1 killed and 1,221 injured whilst attending to engines at rest in sheds, &c.; 2 killed and 844 injured by falling off, or when getting on or off, engines or vehicles at rest; 283 injured by falling off platforms on to the ballast; 30 killed and 385 injured by falling off ladders, scaffolds, &c.; 607 injured by stumbling whilst walking on the line ; 172 injured by being trampled on or kicked by horses whilst engaged in railway work : 1 killed and 11 injured by being struck by articles thrown from passing trains ; 2 killed and 654 injured by the falling of rails, sleepers, &c. when at work on the line ; 7 killed and 1,131 injured in other ways when at work on the line or in sidings ; and 4 killed and 831 injured from various other causes. Of persons transacting business on the companies' premises, 14 were killed and 279 injured ; and of other persons not coming within the above classifications 18 were killed and 136 injured ; making a total in this class of accidents of 90 persons killed and 11,274 injured.

Thus the total number of personal accidents reported to the Board of Trade by the several Railway Companies during the twelve months amounts to 1,255 persons killed and 17,376 injured.

# TABLES OF ACCIDENTS.

# NOTE.

All accidents which occur in the working of railways or on railway premises to persons other than servants of the companies (described in the following Tables as "Passengers" and "Other Persons") are required to be reported to the Board of Trade, however slight the injuries may be; but, as regards servants of the companies, only those accidents which prevent the servant injured from being employed for five hours on his ordinary work on any one of the three working days next after the accident are reported.

The following Tables therefore show the total number of persons other than servants of the companies injured from accidents arising in the working of railways or on railway premises, but only the number of servants whose injuries prevent them working for five hours on any one of the three working days next after the accident.

## TABLE No. 1.

**Summary Statement of the Number of Passengers, Servants of the Companies and of Contractors, and other Persons** reported to the BOARD OF TRADE by RAILWAY COMPANIES as having been KILLED or INJURED in each DIVISION of the UNITED KINGDOM in ACCIDENTS to TRAINS, and by the RUNNING of TRAINS or the MOVEMENT of RAILWAY VEHICLES, during the Year ending 31st December 1897; with corresponding figures for the UNITED KINGDOM for the Year 1896.

| —— | 1897. | | | | | | | | 1896. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ENGLAND AND WALES. | | SCOTLAND. | | IRELAND. | | UNITED KINGDOM. | | UNITED KINGDOM. | |
| | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. |
| PASSENGERS :— | | | | | | | | | | |
| In accidents to trains ... ... (For details *see* Table No. 2, p. 10.) | 15 | 284 | 3 | 35 | ... | 5 | 18 | 324 | 5 | 388 |
| From other accidents connected with the running of trains or the movement of railway vehicles. (For details *see* Table No. 3, p. 12.) | 92 | 1,207 | 18 | 102 | 5 | 6 | 115 | 1,315 | 88 | 1,198 |
| TOTAL OF PASSENGERS ... | 107 | 1,491 | 21 | 137 | 5 | 11 | 133 | 1,639 | 93 | 1,586 |
| SERVANTS :— | | | | | | | | | | |
| In accidents to trains ... ... (For details *see* Table No. 2, p. 10.) | 6 | 121 | 1 | 17 | 2 | 2 | 9 | 140 | 3 | 153 |
| From other accidents connected with the running of trains or the movement of railway vehicles. (For details *see* Table No. 3, p. 12.) | 395 | 3,554 | 82 | 385 | 24 | 50 | 501 | 3,989 | 444 | 3,833 |
| TOTAL OF SERVANTS ... | 401 | 3,675 | 83 | 402 | 26 | 52 | 510 | 4,129 | 447 | 3,986 |
| OTHER PERSONS :— | | | | | | | | | | |
| In accidents to trains. (*See* Table No. 2.) | 4 | 12 | 1 | ... | 2 | ... | 7 | 12 | ... | 8 |
| While passing over railways at level crossings. (*See* Table No. 3.) | 72 | 24 | 4 | 1 | 4 | ... | 80 | 25 | 51 | 27 |
| While trespassing on line. (*See* Table No. 3.) | 176 | 99 | 57 | 43 | 22 | ... | 255 | 142 | 261 | 110 |
| Suicides and attempted suicides. (*See* Table No. 3.) | 114 | 15 | 16 | 2 | 2 | 1 | 132 | 18 | 114 | 27 |
| On business at stations and sidings. (*See* Table No. 3.) | 24 | 102 | 9 | 16 | 3 | 4 | 36 | 122 | 33 | 121 |
| Miscellaneous not included above. (*See* Table No. 3.) | 12 | 9 | ... | 6 | ... | ... | 12 | 15 | 9 | 12 |
| TOTAL OF OTHER PERSONS | 402 | 261 | 87 | 68 | 33 | 5 | 522 | 334 | 468 | 305 |
| GRAND TOTAL OF PASSENGERS, SERVANTS, AND OTHER PERSONS. | 910 | 5,427 | 191 | 607 | 64 | 68 | 1,165 | 6,102 | 1,008 | 5,877 |

*Note.*—For the number of persons killed or injured on railway premises otherwise than through accidents to trains or the movement of railway vehicles, *see* Tables 8, 9, and 10.

NUMBER OF PERSONS KILLED OR

## TABLE No. 2.

NUMBER OF PASSENGERS, SERVANTS of the COMPANIES and of CONTRACTORS, and OTHER PERSONS in each DIVISION of the UNITED KINGDOM, in the different CLASSES of

| CLASS OF ACCIDENT. | NUMBER OF PASSENGERS. | | | | | | | | NUMBER OF SERVANTS. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | England and Wales. | | Scotland. | | Ireland. | | United Kingdom. | | England and Wales. | | Scotland. | | Ireland. | | United Kingdom. | |
| | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. |
| 1. Collisions between passenger trains or parts of passenger trains. | 2 | 134 | ... | 3 | ... | 3 | 2 | 140 | 1 | 22 | ... | 1 | ... | ... | 1 | 23 |
| 2. Collisions between passenger trains and goods or mineral trains, light-engines, or other moving vehicles. | ... | 48 | ... | 4 | ... | ... | ... | 52 | ... | 21 | ... | 2 | ... | ... | ... | 23 |
| 3. Collisions between goods trains or parts of goods trains, light-engines, or other moving vehicles. | ... | ... | ... | ... | ... | ... | ... | ... | ... | 36 | 1 | 2 | ... | ... | 1 | 38 |
| 4. Collisions between trains and vehicles standing foul of the line. | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... |
| 5. Collisions between trains and buffer-stops, or vehicles at rest: | | | | | | | | | | | | | | | | |
| (a) From trains running into stations at too high a speed. | ... | 29 | ... | 3 | ... | ... | ... | 32 | ... | 1 | ... | 1 | ... | ... | ... | 2 |
| (b) From other causes ... ... | 2 | 9 | ... | 1 | ... | ... | 2 | 10 | ... | 5 | ... | 6 | ... | ... | ... | 11 |
| 6. Trains coming in contact with projections from other trains running on parallel lines. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 7. Passenger trains or parts of passenger trains leaving the rails. | 10 | 61 | 3 | 24 | ... | 1 | 13 | 86 | 2 | 5 | ... | ... | ... | ... | 2 | 5 |
| 8. Goods trains or parts of goods trains, light-engines, &c. leaving the rails. | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 6 | ... | 2 | ... | 1 | 1 | 9 |
| 9. Trains running through gates at level-crossings, or into other obstacles. | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 2 | ... | ... | ... | ... | 1 | 2 |
| 10. The bursting of boilers or tubes, &c. of engines. | ... | ... | ... | ... | ... | ... | ... | ... | ... | 7 | ... | ... | ... | ... | ... | 7 |
| 11. Other accidents arising from the failure of rolling-stock (including the failure of wheels, tyres, axles, couplings, brake-apparatus, and ropes on inclines). | ... | ... | ... | ... | ... | ... | ... | ... | ... | 13 | ... | 3 | 2 | 1 | 2 | 17 |
| 12. Other accidents arising from the failure of permanent-way (including failure of tunnels, bridges, viaducts, culverts, and rails, the flooding of the permanent-way, and slips in cuttings and embankments). | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | 1 | 1 |
| 13. Fires in trains ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 14. Other accidents ... ... | 1 | 2 | ... | ... | ... | 1 | 1 | 3 | ... | 2 | ... | ... | ... | ... | ... | 2 |
| TOTAL ... ... | 15 | 284 | 3 | 35 | ... | 5 | 18 | 324 | 6 | 121 | 1 | 17 | 2 | 2 | 9 | 140 |

N.B.—The Board of Trade state the cause of accident as returned by the Companies, but do not guarantee

**INJURED IN ACCIDENTS TO TRAINS.**

## TABLE No. 2.

reported to the BOARD of TRADE by RAILWAY COMPANIES, as having been KILLED or INJURED ACCIDENTS to TRAINS, during the Year ending 31st December 1897.

| NUMBER OF OTHER PERSONS. | | | | | | | | TOTAL OF PASSENGERS, SERVANTS, AND OTHER PERSONS. | | | | | | | | CLASS OF ACCIDENT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| England and Wales. | | Scotland. | | Ireland. | | United Kingdom. | | England and Wales. | | Scotland. | | Ireland. | | United Kingdom. | | |
| Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | |
| ... | ... | ... | ... | ... | ... | ... | ... | 3 | 156 | ... | 4 | ... | 3 | 3 | 163 | 1. Collisions between passenger trains or parts of passenger trains. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | 69 | ... | 6 | ... | ... | ... | 75 | 2. Collisions between passenger trains and goods or mineral trains, light-engines, or other moving vehicles. |
| ... | ... | 1 | ... | ... | ... | 1 | ... | ... | 36 | 2 | 2 | ... | ... | 2 | 38 | 3. Collisions between goods trains or parts of goods trains, light-engines, or other moving vehicles. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | 4. Collisions between trains and vehicles standing foul of the line. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | 30 | ... | 4 | ... | ... | ... | 34 | 5. Collisions between trains and buffer-stops, or vehicles at rest :<br>(*a*) From trains running into stations at too high a speed. |
| ... | ... | ... | ... | ... | ... | ... | ... | 2 | 14 | ... | 7 | ... | ... | 2 | 21 | (*b*) From other causes. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 6. Trains coming in contact with projections from other trains running on parallel lines. |
| ... | ... | ... | ... | ... | ... | ... | ... | 12 | 66 | 3 | 24 | ... | 1 | 15 | 91 | 7. Passenger trains or parts of passenger trains leaving the rails. |
| ... | ... | ... | ... | ... | ... | ... | ... | 1 | 6 | ... | 2 | ... | 1 | 1 | 9 | 8. Goods trains or parts of goods trains, light-engines, &c. leaving the rails. |
| 4 | 12 | ... | ... | 2 | ... | 6 | 12 | 5 | 14 | ... | ... | 2 | ... | 7 | 14 | 9. Trains running through gates at level-crossings, or into other obstacles. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | 7 | ... | ... | ... | ... | ... | 7 | 10. The bursting of boilers or tubes, &c. of engines. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | 13 | ... | 3 | 2 | 1 | 2 | 17 | 11. Other accidents arising from the failure of rolling-stock (including the failure of wheels, tyres, axles, couplings, brake-apparatus, and ropes on inclines). |
| ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | 1 | 1 | 12. Other accidents arising from the failure of permanent-way (including failure of tunnels, bridges, viaducts, culverts, and rails, the flooding of the permanent-way, and slips in cuttings and embankments). |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 13. Fires in trains. |
| ... | ... | ... | ... | ... | ... | ... | ... | 1 | 4 | ... | ... | ... | 1 | 1 | 5 | 14. Other accidents. |
| 4 | 12 | 1 | ... | 2 | ... | 7 | 12 | 25 | 417 | 5 | 52 | 4 | 7 | 34 | 476 | TOTAL. |

or otherwise adopt the statement, except in cases where an official inquiry has been held.

## NUMBER OF PERSONS KILLED OR INJURED FROM THE RUNNING

## TABLE No. 3.

NUMBER of PASSENGERS, SERVANTS of the COMPANIES and of CONTRACTORS, and OTHER PERSONS in each DIVISION of the UNITED KINGDOM, by the RUNNING of TRAINS or by the

| —— | ENGLAND AND WALES. | | SCOTLAND. | |
|---|---|---|---|---|
| | Killed. | Injured. | Killed. | Injured. |
| **PASSENGERS :—** | | | | |
| 1. From falling between trains and platforms : | | | | |
| (1) When entering trains ... ... ... ... | 13 | 49 | 7 | 8 |
| (2) When alighting from trains ... ... ... | 11 | 55 | 2 | 6 |
| 2. From falling on to the platform, ballast, &c. : | | | | |
| (1) When entering trains ... ... ... ... | ... | 79 | ... | 2 |
| (2) When alighting from trains ... ... ... | 9 | 612 | 1 | 46 |
| 3. From falling off platforms and being struck or run over by trains. | 10 | 5 | 3 | 1 |
| 4. Whilst crossing the line at stations : | | | | |
| (1) Where there is either a subway or footbridge | 12 | 6 | ... | ... |
| (2) Where there is neither a subway nor footbridge | 10 | 5 | ... | ... |
| 5. By the closing of carriage doors ... ... ... | ... | 216 | ... | 17 |
| 6. From falling out of carriages during the running of trains. | 15 | 49 | 2 | 13 |
| 7. By other accidents ... ... ... ... ... | 12 | 131 | 3 | 9 |
| TOTAL OF PASSENGERS ... ... ... | 92 | 1,207 | 18 | 102 |
| **SERVANTS :—** | | | | |
| By accidents occurring during shunting operations, viz : | | | | |
| 1. Whilst coupling or uncoupling vehicles ... | 13 | 429 | 5 | 54 |
| 2. By coming in contact, whilst riding on vehicles, with other vehicles, &c. standing on adjacent lines. | 3 | 23 | ... | 3 |
| 3. While passing over, under, or standing on buffers. | 7 | 67 | 4 | 21 |
| 4. When getting on or off, or falling off engines, waggons, &c. | 5 | 369 | 2 | 36 |
| 5. Whilst braking, spragging, or chocking wheels | 4 | 290 | ... | 35 |
| 6. Whilst attending to ground-points ... ... | 2 | 69 | 1 | 9 |
| 7. Whilst moving vehicles by capstans, turntables, props, levers, &c. | 3 | 340 | 1 | 23 |
| 8. By other accidents not included in the preceding. | 36 | 562 | 5 | 38 |
| 9. From falling off trains, engines, &c. in motion ... | 8 | 49 | ... | 9 |
| 10. When getting on or off engines, vans, &c., during the running of trains. | 6 | 150 | 2 | 22 |
| 11. By coming in contact with over-bridges or erections on the sides of the line. | 5 | 53 | 2 | 17 |
| 12. Whilst attending to, or by the failure of, machinery, &c. of engines in motion. | 2 | 325 | ... | 37 |
| 13. Whilst working on the permanent-way, sidings, &c. | 81 | 167 | 19 | 27 |
| 14. Whilst attending to gates at level-crossings ... | 5 | 6 | 2 | ... |
| 15. Whilst walking, crossing, or standing on the line on duty : | | | | |
| (1) At stations ... ... ... ... ... | 77 | 166 | 19 | 19 |
| (2) At other parts of the line ... ... ... | 19 | 24 | 1 | 3 |
| 16. From being caught between vehicles ... ... | 25 | 85 | 2 | 7 |
| 17. From falling or being caught between trains and platforms, walls, &c. | 18 | 55 | 1 | 5 |
| 18. Whilst walking, &c. along the line to or from work | 57 | 47 | 10 | 10 |
| 19. Miscellaneous ... ... ... ... ... ... | 19 | 278 | 6 | 10 |
| TOTAL OF SERVANTS ... ... ... | 395 | 3,554 | 82 | 385 |
| **OTHER PERSONS :—** | | | | |
| 1. Whilst passing over railways at level-crossings ... | 72 | 24 | 4 | 1 |
| 2. Whilst trespassing on line ... ... ... ... | 176 | 99 | 57 | 43 |
| 3. Suicides and attempted suicides ... ... ... | 114 | 15 | 16 | 2 |
| 4. On business at stations and sidings ... ... ... | 24 | 102 | 9 | 16 |
| 5. Miscellaneous (not included above) ... ... ... | 12 | 9 | ... | 6 |
| TOTAL OF OTHER PERSONS ... ... | 398 | 249 | 86 | 68 |
| GRAND TOTAL ... ... ... ... ... | 885 | 5,010 | 186 | 555 |

N.B.—The Board of Trade state the cause of the accident as returned by the Companies, but do not

of Trains or the Movement of Railway Vehicles.

## TABLE No. 3.

reported to the Board of Trade by Railway Companies as having been Killed or Injured Movement of Railway Vehicles during the Year ending 31st December 1897.

| Ireland. | | United Kingdom. | | — |
|---|---|---|---|---|
| Killed. | Injured. | Killed. | Injured. | |
| | | | | Passengers :— |
| | | | | 1. From falling between trains and platforms : |
| ... | 2 | 20 | 59 | (1) When entering trains. |
| 1 | ... | 14 | 61 | (2) When alighting from trains. |
| | | | | 2. From falling on to the platform, ballast, &c. : |
| ... | ... | ... | 81 | (1) When entering trains. |
| 1 | 3 | 11 | 661 | (2) When alighting from trains. |
| 1 | ... | 14 | 6 | 3. From falling off platforms and being struck or run over by trains. |
| | | | | 4. Whilst crossing the line at stations : |
| ... | ... | 12 | 6 | (1) Where there is either a subway or footbridge. |
| 1 | ... | 11 | 5 | (2) Where there is neither a subway nor footbridge. |
| ... | 1 | ... | 234 | 5. By the closing of carriage doors. |
| 1 | ... | 18 | 62 | 6. From falling out of carriages during the running of trains. |
| ... | ... | 15 | 140 | 7. By other accidents. |
| 5 | 6 | 115 | 1,315 | Total of Passengers. |
| | | | | Servants :— |
| | | | | By accidents occurring during shunting operations, viz. : |
| 1 | 9 | 19 | 492 | 1. Whilst coupling or uncoupling vehicles. |
| ... | 1 | 3 | 27 | 2. By coming in contact, whilst riding on vehicles, with other vehicles, &c. standing on adjacent lines. |
| 2 | 2 | 13 | 90 | 3. While passing over, under, or standing on buffers. |
| 1 | 5 | 8 | 410 | 4. When getting on or off, or falling off engines, waggons, &c. |
| ... | 3 | 4 | 328 | 5. While braking, spragging, or chocking wheels. |
| ... | 1 | 3 | 79 | 6. Whilst attending to ground-points. |
| 1 | 5 | 5 | 368 | 7. Whilst moving vehicles by capstans, turn-tables, props, levers, &c. |
| 1 | 6 | 42 | 606 | 8. By other accidents not included in the preceding. |
| 2 | 1 | 10 | 59 | 9. From falling off trains, engines, &c. in motion. |
| ... | 1 | 8 | 173 | 10. When getting on or off engines, vans, &c. during the running of trains. |
| 1 | 2 | 8 | 72 | 11. By coming in contact with over-bridges or erections on the sides of the line. |
| ... | 3 | 2 | 365 | 12. Whilst attending to, or by the failure of machinery, &c. of engines in motion. |
| 4 | 2 | 104 | 196 | 13. Whilst working on the permanent-way, slidings. &c. |
| 1 | ... | 8 | 6 | 14. Whilst attending to gates at level-crossings. |
| | | | | 15. Whilst walking, crossing, or standing on the line on duty : |
| 3 | 2 | 99 | 187 | (1) At stations. |
| ... | ... | 20 | 27 | (2) At other parts of the line. |
| ... | 4 | 27 | 96 | 16. From being caught between vehicles. |
| 2 | 2 | 21 | 62 | 17. From falling or being caught between trains and platforms, walls, &c. |
| 4 | ... | 71 | 57 | 18. Whilst walking, &c. along the line to or from work. |
| 1 | 1 | 26 | 289 | 19. Miscellaneous. |
| 24 | 50 | 501 | 3,989 | Total of Servants. |
| | | | | Other Persons :— |
| 4 | ... | 80 | 25 | 1. Whilst passing over railways at level-crossings. |
| 22 | ... | 255 | 142 | 2. Whilst trespassing on line. |
| 2 | 1 | 132 | 18 | 3. Suicides and attempted suicides. |
| 3 | 4 | 36 | 122 | 4. On business at stations and sidings. |
| ... | ... | 12 | 15 | 5. Miscellaneous (not included above). |
| 31 | 5 | 515 | 322 | Total of Other Persons. |
| 60 | 61 | 1,131 | 5,626 | Grand Total. |

guarantee or otherwise adopt the statement, except in cases where an official inquiry has been held.

## TABLE No. 4.

NUMBER of PERSONS reported to the BOARD OF TRADE by RAILWAY COMPANIES as having been KILLED or to TRAINS, ROLLING-STOCK, and PERMANENT-WAY of the

| NAME OF COMPANY. | 1 Collisions between Passenger Trains or Parts of Passenger Trains. | | 2 Collisions between Passenger Trains and Goods or Mineral Trains, Light-Engines, &c. | | 3 Collisions between Goods Trains or Parts of Goods Trains, Light-Engines, &c. | | 4 Collisions between Trains and Vehicles standing foul of the Line. | | 5 Collisions between Trains and Buffer-Stops, or Vehicles at rest. (a.) From Trains running into Stations at too high a speed. | | 5 (b.) From other Causes. | | 6 Trains coming in Contact with Projections from other Trains running on Parallel Lines. | | 7 Passenger Trains or Parts of Passenger Trains leaving the Rails. | | 8 Goods Trains or Parts of Goods Trains, Light-Engines, &c. leaving the Rails. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | K.* | I.† | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. |
| ENGLAND AND WALES. | | | | | | | | | | | | | | | | | | |
| Cambrian ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 11 | 17 | ... | ... |
| Cardiff (late Bute Docks)... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Cheshire Lines ... ... | 2 | 8 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... |
| Great Central ... ... | 1 | 4 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Great Eastern ... ... | ... | 28 | ... | ... | ... | ... | ... | ... | ... | 2 | ... | 1 | ... | ... | ... | ... | ... | ... |
| Great Northern ... ... | ... | ... | ... | 11 | ... | 1 | ... | ... | ... | 16 | ... | 2 | ... | ... | ... | ... | ... | ... |
| Great Western ... ... | ... | 6 | ... | 1 | ... | 3 | ... | 1 | ... | 7 | ... | 3 | ... | ... | ... | ... | ... | 1 |
| Lancashire and Yorkshire | ... | 8 | ... | 10 | ... | 14 | ... | ... | ... | 1 | 2 | 6 | ... | ... | ... | ... | ... | 1 |
| Lancashire and Yorkshire and London and North-Western Joint. | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... |
| Lancashire, Derbyshire, and East Coast. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... |
| Liverpool Overhead ... | ... | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| London and North-Western | ... | ... | ... | 2 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 1 | 1 |
| London and North-Western and Great Western Joint. | ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| London and South-Western | ... | 11 | ... | 3 | ... | 2 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... |
| London, Brighton, and South Coast. | ... | 15 | ... | ... | ... | 2 | ... | ... | .. | ... | ... | ... | ... | ... | 1 | 32 | ... | 1 |
| London, Chatham, and Dover. | ... | 40 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| London, Tilbury, and Southend. | ... | 16 | ... | 10 | ... | ... | .. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Manchester, Sheffield, and Lincolnshire. (*See* Great Central.) | ... | ... | ... | ... | ... | ... | ... | ... | .. | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Metropolitan District ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Midland ... ... ... | ... | 1 | ... | 3 | ... | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 8 | ... | ... |
| North-Eastern ... ... | ... | 10 | ... | 18 | ... | 9 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| North Staffordshire ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | 1 |
| South-Eastern ... ... | ... | 6 | ... | 6 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... |
| West London Extension Joint. | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | ... | ... | ... | ... | ... | ... | ... | ... |
| Wirral ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| TOTAL, ENGLAND AND WALES ... | 3 | 156 | ... | 69 | .. | 36 | ... | 1 | ... | 30 | 2 | 14 | ... | ... | 12 | 66 | 1 | 6 |
| SCOTLAND | | | | | | | | | | | | | | | | | | |
| Caledonian ... ... ... | ... | 1 | ... | 1 | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| Glasgow and Paisley Joint | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | .. | ... | ... | ... | ... |
| Glasgow and South-Western. | ... | ... | ... | 3 | ... | ... | ... | ... | ... | 4 | ... | ... | ... | ... | ... | ... | ... | ... |
| Great North of Scotland ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 6 | ... | ... | ... | ... | ... | ... |
| North British ... ... | ... | 3 | ... | 2 | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 23 | ... | 1 |
| TOTAL, SCOTLAND ... | ... | 4 | ... | 6 | 2 | 2 | ... | ... | ... | 4 | ... | 7 | ... | ... | 3 | 24 | ... | 2 |
| IRELAND. | | | | | | | | | | | | | | | | | | |
| Belfast and Northern Counties. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Great Northern ... .. | ... | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| Great Southern and Western. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Midland Great Western ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Waterford and Central Ireland. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... |
| West Clare ... ... ... | ... | ... | ... | | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| TOTAL, IRELAND ... | ... | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| TOTAL, UNITED KINGDOM ... ... | 3 | 163 | ... | 75 | 2 | 38 | ... | 1 | ... | 34 | 2 | 21 | ... | ... | 15 | 91 | 1 | 9 |

NOTE.—In the above Table the persons killed and injured from accidents are entered against the Company on whose

* Killed † Injured.

INJURED IN ACCIDENTS TO TRAINS.

## TABLE No. 4.

**INJURED** in the different **CLASSES** of **ACCIDENTS** occurring on the **LINES** of the several **RAILWAY COMPANIES COMPANIES** during the Year ending 31st December 1897.

| 9 Trains running through Gates at Level Crossings or other Obstacles. | | 10 The bursting of Boilers or Tubes, &c., of Engines. | | 11 Accidents arising from the Failure of Rolling-Stock (including Failure of Wheels, Tyres, Axles, &c.). | | 12 Accidents arising from the Failure of Permanent-Way (including Failure of Tunnels, Bridges, Rails, &c.). | | 13 Fires in Trains. | | 14 Other Accidents. | | Total Number of Persons of all Classes. | | Number of Passengers and others. | | Number of Servants. | | NAME OF COMPANY. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K.* | I.† | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | |
| | | | | | | | | | | | | | | | | | | ENGLAND AND WALES. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 11 | 17 | 10 | 15 | 1 | 2 | Cambrian. |
| 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | 1 | 1 | ... | Cardiff (late Bute Docks). |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 10 | 1 | 9 | 1 | 1 | Cheshire Lines. |
| ... | ... | ... | 1 | ... | ... | 1 | 1 | ... | ... | ... | ... | 2 | 7 | 1 | 5 | 1 | 2 | Great Central. |
| ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 33 | ... | 31 | ... | 2 | Great Eastern. |
| 2 | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | 2 | 31 | 2 | 26 | ... | 5 | Great Northern. |
| 1 | 3 | ... | ... | ... | 4 | ... | ... | ... | ... | ... | ... | 1 | 29 | 1 | 17 | ... | 12 | Great Western. |
| ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 41 | 2 | 14 | ... | 27 | Lancashire and Yorkshire. |
| ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4 | ... | 2 | ... | 2 | Lancashire and Yorkshire and London and North Western Joint. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | Lancashire, Derbyshire, and East Coast. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | ... | 3 | ... | .. | Liverpool Overhead. |
| ... | ... | ... | 3 | ... | 1 | ... | ... | ... | ... | 1 | 2 | 2 | 13 | 1 | 3 | 1 | 10 | London and North-Western. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | 2 | London and North-Western and Great Western Joint. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 18 | ... | 15 | ... | 3 | London and South-Western. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 50 | ... | 43 | 1 | 7 | London, Brighton, and South Coast. |
| ... | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 42 | ... | 40 | ... | 2 | London, Chatham, and Dover. |
| ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 28 | ... | 21 | ... | 7 | London, Tilbury, and Southend. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | Manchester, Sheffield, and Lincolnshire. (*See* Great Central. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | Metropolitan District. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 15 | ... | 10 | ... | 5 | Midland. |
| 1 | 4 | ... | 2 | ... | 4 | ... | ... | ... | ... | ... | ... | 1 | 48 | 1 | 25 | ... | 23 | North-Eastern. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | ... | 2 | ... | 1 | North Staffordshire. |
| ... | ... | .. | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | 16 | ... | 9 | ... | 7 | South-Eastern. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | ... | 3 | ... | ... | West London Extension Joint. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | 1 | ... | ... | Wirral. |
| 5 | 14 | ... | 7 | ... | 13 | 1 | 1 | ... | ... | 1 | 4 | 25 | 417 | 19 | 296 | 6 | 121 | TOTAL, ENGLAND AND WALES. |
| | | | | | | | | | | | | | | | | | | SCOTLAND. |
| ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... | 1 | 7 | 1 | 2 | ... | 5 | Caledonian. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | Glasgow and Paisley Joint. |
| ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 8 | ... | 5 | ... | 3 | Glasgow and South-Western. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 6 | ... | ... | ... | 6 | Great North of Scotland. |
| ... | ... | ... | .. | ... | ... | ... | ... | ... | ... | ... | ... | 4 | 30 | 3 | 27 | 1 | 3 | North British. |
| ... | ... | ... | ... | ... | 3 | ... | ... | ... | ... | ... | ... | 5 | 52 | 4 | 35 | 1 | 17 | TOTAL, SCOTLAND. |
| | | | | | | | | | | | | | | | | | | IRELAND. |
| ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | 2 | ... | Belfast and Northern Counties. |
| .. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4 | ... | 3 | ... | 1 | Great Northern. |
| 1 | ... | ... | ... | ... | ... | ... | ... | ... | .. | ... | ... | 1 | ... | 1 | ... | ... | ... | Great Southern and Western. |
| ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | Midland Great Western. |
| 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | 1 | 1 | ... | ... | Waterford and Central Ireland. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | 1 | ... | ... | West Clare. |
| 2 | ... | ... | ... | 2 | 1 | ... | ... | ... | ... | ... | 1 | 4 | 7 | 2 | 5 | 2 | 2 | TOTAL, IRELAND. |
| 7 | 14 | ... | 7 | 2 | 17 | 1 | 1 | ... | ... | 1 | 5 | 34 | 476 | 25 | 336 | 9 | 140 | TOTAL, UNITED KINGDOM. |

**lines the accidents occurred, except in cases of injuries arising from the accidents enumerated in Columns Nos. 10 and 11.**

*** Killed. † Injured.**

## NUMBER OF PERSONS KILLED OR INJURED BY THE RUNNING

## TABLE No. 5.

NUMBER of PERSONS reported to the BOARD OF TRADE as having been KILLED or INJURED upon the several
during the Year

### A. PASSENGERS.

| NAME OF COMPANY. | 1 From falling between Trains and Platforms. | | | | 2 From falling on to the Platform, Ballast, &c. | | | | 3 From falling off Platforms and being struck or run over by Trains. | | 4 Whilst crossing the line at Stations. | | | | 5 By the closing of Carriage Doors. | | 6 From falling out of Carriages during the running of Trains. | | 7 By other Accidents | | Total. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (a) When entering Trains. | | (b) When alighting from Trains. | | (a) When entering Trains. | | (b) When alighting from Trains. | | | | (a) Where there is either a Subway or Foot-bridge. | | (b) Where there is neither a Subway nor Foot-bridge. | | | | | | | | | |
| | K.* | I.† | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. |
| ENGLAND AND WALES. | | | | | | | | | | | | | | | | | | | | | | |
| Ashby and Nuneaton Joint | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| Cambrian ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 1 | ... | 1 | 2 |
| Cheshire Lines ... ... | 2 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | 1 | 1 | 4 | 3 |
| City and South London ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| Furness ... ... ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | 6 | ... | ... | ... | 2 | ... | 10 |
| Great Central ... ... | ... | 2 | ... | 2 | ... | 6 | ... | 6 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | ... | ... | ... | 19 |
| Great Eastern ... ... | 2 | 12 | 1 | 10 | ... | 11 | 1 | 52 | 1 | 1 | 4 | ... | 1 | ... | ... | 11 | 1 | 4 | 2 | 21 | 13 | 122 |
| Great Northern ... ... | 1 | 3 | 1 | ... | ... | 1 | 1 | 3 | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... | 1 | 1 | 3 | 5 | 13 |
| Great Western ... ... | 3 | 2 | 2 | 2 | ... | 5 | 2 | 44 | ... | ... | ... | 2 | 2 | 2 | ... | 17 | 4 | 5 | ... | 10 | 13 | 89 |
| Hull, Barnsley and West Riding Junction. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 |
| Lancashire and Yorkshire ... | 1 | 3 | 2 | 9 | ... | 3 | ... | 51 | 1 | ... | 1 | ... | 1 | ... | ... | 41 | ... | 3 | 1 | 4 | 7 | 114 |
| Lancashire and Yorkshire and London and North-Western Joint. | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 8 | ... | ... | ... | ... | ... | 9 |
| Lancashire, Derbyshire and East Coast. | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| Liverpool Overhead... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | ... |
| London and North-Western | ... | 4 | 2 | 8 | ... | 4 | ... | 70 | 2 | 1 | 2 | 1 | 1 | ... | ... | 55 | 2 | 10 | ... | 20 | 9 | 173 |
| London and North-Western and Great Western Joint. | ... | ... | ... | 2 | ... | ... | ... | 15 | ... | ... | ... | ... | ... | ... | ... | 9 | ... | ... | ... | 11 | ... | 37 |
| London and South-Western | ... | 4 | ... | 5 | ... | 7 | 1 | 130 | 1 | ... | 1 | 1 | ... | 2 | ... | 2 | ... | 5 | ... | 16 | 3 | 172 |
| London, Brighton, and South Coast. | ... | ... | ... | 2 | ... | ... | ... | 8 | ... | ... | 1 | 1 | 1 | ... | ... | ... | ... | 2 | ... | 1 | 2 | 14 |
| London, Chatham, and Dover | ... | 1 | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | 1 | 4 |
| London, Tilbury, and Southend. | ... | ... | ... | ... | ... | 2 | ... | 4 | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | .. | 1 | 1 | 7 |
| Macclesfield Committee ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| Manchester, Sheffield, and Lincolnshire. (*See* Great Central.) | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Maryport and Carlisle ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| Mersey ... ... ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 3 |
| Metropolitan... ... ... | 2 | 2 | ... | ... | ... | 1 | ... | 4 | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | 1 | ... | 5 | 8 |
| Metropolitan and Great Western Joint. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 |
| Metropolitan and Metropolitan District Joint. | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 |
| Metropolitan District ... | ... | 2 | ... | ... | ... | 5 | ... | 11 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 2 | 1 | 20 |
| Midland ... ... ... | ... | 7 | 3 | 10 | ... | 9 | ... | 57 | ... | 1 | ... | ... | 1 | ... | ... | 22 | 1 | 1 | ... | 23 | 5 | 130 |
| Midland and Great Western Joint. | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | 4 |
| Midland and London and North-Western Joint. | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 |
| Normanton Joint Station ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| North and South-Western Junction. | ... | ... | ... | ... | .. | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 |

* Killed.

NOTE.—In the above Table the persons killed and injured

† Injured.

**OF TRAINS OR THE MOVEMENT OF RAILWAY VEHICLES.**

## TABLE No. 5.

**RAILWAYS in the UNITED KINGDOM from the RUNNING of TRAINS or the MOVEMENT of RAILWAY VEHICLES ending 31st December 1897.**

### A. PASSENGERS.

| NAME OF COMPANY. | 1 From falling between Trains and Platforms. | | | | 2 From falling on to the Platform, Ballast, &c. | | | | 3 From falling off Platforms and being struck or run over by Trains. | | 4 Whilst crossing the Line at Stations. | | | | 5 By the closing of Carriage Doors. | | 6 From falling out of Carriages during the running of Trains. | | 7 By other Accidents | | Total. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (a) When entering Trains. | | (b) When alighting from Trains. | | (a) When entering Trains. | | (b) When alighting from Trains. | | | | (a) Where there is either a Subway or Foot-bridge. | | (b) Where there is neither a Subway nor Foot-bridge. | | | | | | | | | |
| | K.* | I.† | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. |
| **ENGLAND AND WALES—*cont.*** | | | | | | | | | | | | | | | | | | | | | | |
| North-Eastern ... ... | 1 | 2 | ... | 3 | ... | 1 | 2 | 27 | ... | ... | 2 | ... | 1 | ... | ... | 15 | 3 | 5 | 1 | 3 | 10 | 56 |
| North London ... ... | ... | 1 | ... | 1 | ... | 18 | ... | 74 | ... | 1 | ... | ... | ... | ... | ... | 9 | ... | 2 | ... | 10 | ... | 116 |
| North Staffordshire ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 4 |
| Rhymney and Great Western Joint. | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| Sheffield and Midland Joint | ... | 1 | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 4 |
| Somerset and Dorset Joint... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| South-Eastern ... ... | 1 | ... | ... | ... | ... | 1 | 2 | 8 | 1 | ... | ... | ... | ... | ... | ... | 1 | ... | ... | 1 | ... | 5 | 10 |
| Taff Vale ... ... ... | ... | 1 | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 |
| Tottenham and Forest Gate Joint. | ... | ... | ... | 1 | ... | ... | ... | 4 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 2 | 1 | 7 |
| Tottenham and Hampstead Joint. | ... | ... | ... | ... | ... | 2 | ... | 18 | 1 | .. | ... | ... | ... | ... | ... | 13 | ... | 1 | ... | ... | 1 | 34 |
| Wakefield Joint Station ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | .. | ... | ... | ... | ... | 1 |
| West London Extension Joint | ... | ... | ... | ... | ... | 1 | ... | 5 | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | 8 |
| TOTAL, ENGLAND AND WALES ... ... | 13 | 49 | 11 | 55 | ... | 79 | 9 | 612 | 10 | 5 | 12 | 6 | 10 | 5 | ... | 216 | 15 | 49 | 12 | 131 | 92 | 1207 |
| **SCOTLAND.** | | | | | | | | | | | | | | | | | | | | | | |
| Caledonian ... ... ... | 2 | 6 | 2 | 3 | ... | 1 | ... | 23 | ... | ... | ... | ... | ... | ... | ... | 10 | 2 | 3 | 2 | 1 | 8 | 47 |
| Dumbarton and Balloch Joint. | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 2 | 1 |
| Glasgow and Paisley Joint... | ... | ... | ... | 1 | ... | ... | ... | 4 | ... | ... | ... | ... | ... | ... | ... | 4 | ... | 2 | ... | 1 | ... | 12 |
| Glasgow and South-Western | 2 | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 3 | 2 |
| Glasgow, Barrhead, and Kilmarnock Joint. | ... | ... | ... | ... | ... | ... | ... | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 |
| Great North of Scotland ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| Highland ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 |
| North British ... ... | 3 | 1 | ... | 2 | ... | ... | 1 | 15 | 1 | 1 | ... | ... | ... | ... | ... | 3 | ... | 7 | ... | 6 | 5 | 35 |
| TOTAL, SCOTLAND ... | 7 | 8 | 2 | 6 | ... | 2 | 1 | 46 | 3 | 1 | ... | ... | ... | ... | ... | 17 | 2 | 13 | 3 | 9 | 18 | 102 |
| **IRELAND.** | | | | | | | | | | | | | | | | | | | | | | |
| Belfast and County Down ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| Belfast and Northern Counties. | ... | 1 | 1 | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 2 |
| Dublin, Wicklow, and Wexford. | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 2 | ... |
| Great Northern ... ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | .. | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | 1 |
| Great Southern and Western | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 3 |
| TOTAL, IRELAND ... | ... | 2 | 1 | ... | ... | ... | 1 | 3 | 1 | ... | ... | ... | 1 | ... | ... | 1 | 1 | ... | ... | ... | 5 | 6 |
| **TOTAL, UNITED KINGDOM...¶** | **20** | **59** | **14** | **61** | ... | **81** | **11** | **661** | **14** | **6** | **12** | **6** | **11** | **5** | ... | **234** | **18** | **62** | **15** | **140** | **115** | **1315** |

**are entered against the Company on whose line the injury was received.**

* Killed. † Injured.

## TABLE No. 5—*continued.*

**NUMBER** of **PERSONS** reported to the **BOARD OF TRADE** as having been **KILLED** or **INJURED** upon the several during the Year

### B. SERVANTS of COMPANIES and CONTRACTORS.

| NAME OF COMPANY. | BY ACCIDENTS OCCURRING DURING SHUNTING OPERATIONS. | | | | | | | | | | | | | | | | 9. | | 10. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1. Whilst coupling or un-coupling Vehicles. | | 2. By coming in contact whilst riding on Vehicles with other Vehicles, &c., standing on adjacent Lines. | | 3. Whilst passing over, under, or standing upon, Buffers. | | 4. When getting on or off, or falling off, Engines, Waggons, &c. | | 5. Whilst braking, spragging, or chocking Wheels. | | 6. Whilst attending to Ground Points. | | 7. Whilst moving Vehicles by Capstans, Turn-tables, Props, Levers, &c. | | 8. By other Accidents not included in the preceding. | | By falling off Trains, Engines, &c., in Motion. | | When getting on or off Engines, Vans, &c., during the running of Trains. | |
| | K.* | I.† | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. |
| ENGLAND AND WALES. | | | | | | | | | | | | | | | | | | | | |
| Ashby and Nuneaton Joint ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... |
| Barry ... ... ... ... ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Brecon and Merthyr Tydfil Junction | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... |
| Cambrian ... ... ... ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... |
| Cardiff (late Bute Docks) ... ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Carlisle Citadel Station ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... |
| Cheshire Lines ... ... ... ... | ... | 7 | ... | ... | ... | 2 | ... | 4 | ... | 5 | ... | 1 | ... | 7 | ... | 4 | ... | ... | ... | ... |
| Cleator and Workington Junction .. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
| Colne Valley and Halstead ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
| East and West Junction ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Festiniog ... ... ... ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Furness ... ... ... ... ... | ... | ... | ... | ... | ... | 1 | ... | 2 | ... | 1 | ... | 2 | ... | 1 | ... | 2 | ... | ... | ... | 1 |
| Great Central ... ... ... ... | ... | 14 | ... | ... | ... | 1 | ... | 5 | ... | 11 | ... | ... | ... | 4 | 1 | 12 | 1 | ... | ... | 5 |
| Great Eastern ... ... ... ... | 1 | 39 | ... | ... | ... | 2 | ... | 26 | ... | 13 | ... | 6 | ... | 16 | 2 | 38 | ... | 4 | 1 | 15 |
| Great Northern ... ... ... | 1 | 25 | ... | ... | 1 | 2 | 1 | 20 | 2 | 25 | ... | 5 | ... | 11 | 3 | 16 | ... | 2 | 1 | 17 |
| Great Northern and Great Eastern Joint. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | 1 | ... | ... | ... | ... | 1 |
| Great Northern and London and North-Western Joint. | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 2 | ... | ... | ... | ... |
| Great Western ... ... ... ... | 4 | 36 | 2 | 3 | ... | 5 | ... | 22 | 1 | 29 | ... | 4 | ... | 24 | 7 | 34 | 1 | 5 | ... | 7 |
| Hull, Barnsley, and West Riding Junction. | ... | 2 | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | 1 | 1 | 3 | ... | 1 | ... | ... |
| Isle of Wight ... ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Isle of Wight Central... ... ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
| Lancashire and Yorkshire ... ... | 1 | 51 | ... | 1 | ... | 3 | 1 | 36 | ... | 35 | 1 | 9 | ... | 56 | 1 | 68 | ... | 2 | ... | 14 |
| Lancashire and Yorkshire and London and North-Western Joint. | ... | 1 | ... | ... | ... | ... | ... | 2 | ... | 4 | ... | ... | ... | 12 | ... | 2 | ... | ... | ... | ... |
| Lancashire, Derbyshire, and East Coast. | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Liverpool Overhead ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| London and India Docks .. ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... |
| London and North-Western ... ... | 1 | 85 | 1 | 5 | 2 | 13 | 1 | 66 | ... | 59 | ... | 15 | 2 | 99 | 6 | 123 | 2 | 13 | 1 | 20 |
| London and North-Western and Great Western Joint. | ... | 1 | ... | ... | ... | 2 | ... | 3 | ... | ... | ... | ... | ... | 1 | ... | 2 | ... | ... | ... | ... |
| London and North-Western and North Staffordshire Joint. | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| London and South-Western ... ... | 1 | 31 | ... | 5 | ... | 2 | ... | 13 | ... | 9 | ... | 4 | ... | 14 | 2 | 26 | 1 | 2 | ... | 9 |
| London and South-Western and London, Brighton, and South Coast Joint. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 |
| London, Brighton, and South Coast | 2 | 10 | ... | ... | ... | 2 | ... | 4 | ... | 2 | ... | ... | ... | 6 | ... | 6 | ... | 2 | ... | 1 |

* Killed. † Injured.

OF TRAINS OR THE MOVEMENT OF RAILWAY VEHICLES.

## TABLE No. 5—*continued.*

RAILWAYS in the UNITED KINGDOM from the RUNNING of TRAINS or the MOVEMENT of RAILWAY VEHICLES ending 31st December 1897—*continued.*

### B. SERVANTS of COMPANIES and CONTRACTORS.

| 11. By coming in contact with Over-bridges or Erections on the Sides of the Line. | | 12. Whilst attending to, or by the Failure of, Machinery, &c., of Engines in Motion. | | 13. Whilst working on the Permanent Way, Sidings, &c. | | 14. Whilst attending to Gates at Level Crossings. | | 15. Whilst walking, crossing, or standing on the Line on Duty. | | | | 16. From being caught between Vehicles. | | 17. From falling or being caught between Trains and Platforms, Walls, &c. | | 18. Whilst walking, &c., along the Line to or from Work. | | 19. Miscellaneous. | | TOTAL. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | (a.) At Stations. | | (b.) At other Parts of the Line. | | | | | | | | | | | |
| K.* | I.† | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I | K | I. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 2 | ... | ... | ... | 3 | 4 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 3 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | 4 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 2 | 1 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | .. | ... | ... | ... | 1 | 2 |
| ... | ... | ... | 1 | 1 | 4 | ... | ... | 1 | 3 | ... | ... | ... | ... | ... | 2 | ... | 1 | 1 | 1 | 3 | 42 |
| ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| ... | ... | ... | 3 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 14 |
| ... | 4 | 1 | 4 | ... | 3 | ... | ... | 4 | 7 | 2 | 1 | 2 | 2 | ... | 1 | ... | 2 | ... | 4 | 11 | 80 |
| ... | 4 | ... | 19 | 8 | 9 | 1 | 1 | 5 | 12 | ... | 2 | 1 | 4 | ... | 6 | 5 | 1 | ... | 25 | 24 | 242 |
| 1 | 1 | ... | 11 | 6 | 11 | ... | 1 | 4 | 17 | 1 | ... | 1 | 7 | ... | 1 | 3 | 3 | 1 | 18 | 26 | 193 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 2 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4 |
| 1 | 2 | ... | 33 | 13 | 27 | 1 | 1 | 10 | 18 | 5 | 6 | 7 | 8 | 3 | 7 | 10 | 5 | 3 | 22 | 68 | 298 |
| ... | ... | ... | 2 | ... | 1 | ... | ... | 1 | ... | ... | ... | ... | 1 | ... | 1 | ... | 1 | ... | ... | 2 | 15 |
| ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 |
| ... | 7 | ... | 39 | 7 | 8 | ... | 1 | 6 | 27 | 2 | 3 | 1 | 5 | 3 | 5 | 2 | 2 | 2 | 45 | 27 | 417 |
| ... | ... | ... | ... | 2 | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | 2 | ... | 1 | 1 | 6 | 23 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | 1 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... |
| ... | 4 | ... | 96 | 10 | 36 | ... | ... | 10 | 17 | 2 | 1 | ... | 15 | 3 | 8 | 5 | 4 | 4 | 62 | 50 | 741 |
| ... | ... | ... | ... | 2 | 2 | ... | ... | ... | 1 | 1 | 1 | ... | 1 | ... | ... | 1 | ... | ... | 1 | 4 | 15 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| 1 | 4 | ... | 9 | 5 | 9 | ... | ... | 5 | 6 | ... | 2 | 2 | 4 | 1 | 5 | 1 | 3 | 2 | 9 | 21 | 166 |
| ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | .. | ... | ... | ... | ... | ... | ... | ... | 1 | 2 |
| ... | 1 | ... | 1 | 3 | 6 | ... | ... | 3 | 9 | ... | 1 | ... | ... | ... | 3 | 1 | 2 | ... | 2 | 9 | 58 |

* Killed. † Injured.

## NUMBER OF PERSONS KILLED OR INJURED BY THE RUNNING

### TABLE No. 5—*continued.*

NUMBER of PERSONS reported to the BOARD OF TRADE as having been KILLED or INJURED upon the several during the Year

### B. SERVANTS of COMPANIES and CONTRACTORS—*continued.*

| NAME OF COMPANY. | BY ACCIDENTS OCCURRING DURING SHUNTING OPERATIONS. | | | | | | | | | | | | | | | | 9. | | 10. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1. Whilst coupling or un-coupling Vehicles. | | 2. By coming in contact whilst riding on Vehicles with other Vehicles, &c., standing on adjacent Lines. | | 3. Whilst passing over, under, or standing upon, Buffers. | | 4. When getting on or off, or falling off, Engines, Waggons, &c. | | 5. Whilst braking, spragging, or chocking Wheels. | | 6. Whilst attending to Ground Points. | | 7. Whilst moving Vehicles by Capstans, Turn-tables, Props, Levers, &c. | | 8. By other Accidents not included in the preceding. | | By falling off Trains, Engines, &c., in Motion. | | When getting on or off Engines, Vans, &c., during the running of Trains. | |
| | K.* | I.† | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. |
| ENGLAND AND WALES—*cont.* | | | | | | | | | | | | | | | | | | | | |
| London, Chatham, and Dover ... | ... | 1 | ... | ... | ... | 1 | ... | 4 | ... | ... | ... | ... | ... | 6 | ... | 3 | ... | 2 | 1 | 2 |
| London, Tilbury, and Southend ... | ... | 1 | ... | ... | 1 | 1 | ... | .. | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
| Manchester and Milford ... ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Manchester, Sheffield, and Lincolnshire. (See Great Central.) | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | . | ... | ... | ... | ... |
| Manchester Ship Canal ... ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... |
| Manchester, South Junction and Altrincham. | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Mersey ... ... ... ... ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... |
| Metropolitan ... ... ... ... | ... | 1 | ... | 1 | ... | ... | ... | 1 | ... | 2 | ... | ... | ... | ... | ... | ... | ... | 3 | ... | ... |
| Metropolitan and Great Western Joint. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Metropolitan District ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 2 |
| Midland ... ... ... ... ... | ... | 47 | ... | 2 | 2 | 13 | 1 | 90 | ... | 43 | 1 | 9 | ... | 52 | 4 | 103 | 1 | 6 | ... | 31 |
| Midland and Great Northern Joint | ... | 2 | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | 1 |
| Midland and Great Western Joint ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
| Midland and London and North-Western Joint. | ... | 2 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
| Midland and South-Western Junction | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| Neath and Brecon ... .. ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
| Newport (Alexandra) Dock ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... |
| Normanton Joint Station ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 10 | ... | ... | ... | ... |
| North-Eastern ... ... ... ... | ... | 41 | ... | 5 | ... | 9 | ... | 46 | ... | 35 | ... | 8 | ... | 21 | 4 | 70 | 2 | 3 | ... | 12 |
| North London ... ... ... ... | ... | 1 | ... | ... | ... | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 |
| North Staffordshire ... ... ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | 3 | ... | ... | ... | 1 | ... | 3 | ... | ... | ... | 1 |
| Oldham, Ashton-under-Lyne and Guide Bridge Junction. | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Pontypridd, Caerphilly and Newport | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Rhondda and Swansea Bay ... ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Rhymney ... ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| Severn and Wye and Severn Bridge Joint. | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... |
| Sheffield and Midland Joint ... ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
| Somerset and Dorset Joint ... ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | 1 | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... |
| South-Eastern ... ... ... ... | 2 | 11 | ... | 1 | ... | 2 | ... | 4 | 1 | 2 | ... | 2 | 1 | 5 | ... | 17 | ... | ... | 1 | 5 |
| Stalybridge Joint Station ... ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Taff Vale ... ... ... ... | ... | 7 | ... | ... | ... | 2 | ... | 10 | ... | 3 | ... | 1 | ... | ... | ... | 1 | ... | 1 | ... | 2 |
| Tottenham and Hampstead Joint ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| West London Extension Joint ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| Wirral ... ... ... ... ... | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Wrexham, Mold and Connah's Quay | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| GLAND AND WALES ... | 13 | 429 | 3 | 23 | 7 | 67 | 5 | 369 | 4 | 290 | 2 | 69 | 3 | 340 | 36 | 562 | 8 | 49 | 6 | 150 |

* Killed.

† Injured.

OF TRAINS OR THE MOVEMENT OF RAILWAY VEHICLES.

## TABLE No. 5—*continued.*

RAILWAYS in the UNITED KINGDOM from the RUNNING of TRAINS or the MOVEMENT of RAILWAY VEHICLES ending 31st December 1897—*continued.*

### B. SERVANTS of COMPANIES and CONTRACTORS—*continued.*

| 11. By coming in contact with Over-bridges or Erections on the Sides of the Line. | | 12. Whilst attending to, or by the Failure of, Machinery, &c., of Engines in Motion. | | 13. Whilst working on the Permanent-Way, Sidings, &c. | | 14. Whilst attending to Gates at Level Crossings. | | 15. Whilst walking, crossing, or standing on the Line on Duty. | | | | 16. From being caught between Vehicles. | | 17. From falling or being caught between Trains and Platforms, Walls, &c. | | 18. Whilst walking, &c., along the Line to or from Work. | | 19. Miscellaneous. | | TOTAL. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | (a.) At Stations. | | (b.) At other Parts of the Line. | | | | | | | | | | | |
| K.* | I.† | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. |
| ... | 1 | ... | 3 | 2 | 3 | ... | ... | 2 | 5 | ... | 1 | 1 | 2 | 1 | ... | 1 | 2 | 1 | 3 | 9 | 39 |
| ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 3 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | 2 |
| ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 |
| ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 2 | ... | 7 |
| 1 | ... | ... | 1 | 1 | 3 | ... | ... | ... | ... | 1 | ... | ... | 1 | ... | 1 | 1 | 1 | 1 | 4 | 5 | 19 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| ... | 1 | ... | ... | ... | 1 | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 4 | 1 | 10 |
| ... | 13 | ... | 54 | 10 | 17 | ... | 1 | 9 | 21 | 1 | 4 | 3 | 11 | 1 | 6 | 9 | 12 | 2 | 39 | 44 | 574 |
| ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 2 | ... | ... | ... | ... | ... | 3 | 8 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | 4 |
| ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 4 |
| ... | ... | ... | ... | ... | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | 5 |
| ... | ... | ... | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 10 |
| ... | 4 | 1 | 31 | 3 | 10 | 1 | ... | 6 | 11 | 1 | ... | 3 | 15 | ... | 4 | 7 | 6 | 1 | 16 | 29 | 347 |
| ... | ... | ... | 2 | 2 | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4 | 2 | 13 |
| ... | ... | ... | 2 | ... | 1 | ... | ... | ... | 1 | ... | ... | ... | 2 | ... | 1 | 2 | ... | ... | 1 | 2 | 18 |
| ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 3 |
| ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 |
| ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 2 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 5 |
| 1 | 4 | ... | 4 | 3 | 8 | 1 | 1 | 3 | 6 | 1 | 1 | 1 | 4 | 3 | 1 | 4 | 1 | ... | 6 | 22 | 85 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| ... | ... | ... | 4 | 1 | 1 | ... | ... | 1 | 1 | ... | ... | 1 | ... | ... | ... | ... | 1 | ... | 2 | 3 | 36 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 3 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | ... |
| 5 | 53 | 2 | 325 | 81 | 167 | 5 | 6 | 77 | 166 | 19 | 24 | 25 | 85 | 18 | 55 | 57 | 47 | 19 | 278 | 395 | 3554 |

* Killed. † Injured.

### TABLE No. 5—*continued.*

NUMBER of PERSONS reported to the BOARD OF TRADE as having been KILLED or INJURED upon the several during the Year

### B. SERVANTS of COMPANIES and CONTRACTORS—*continued.*

| NAME OF COMPANY. | BY ACCIDENTS OCCURRING DURING SHUNTING OPERATIONS. | | | | | | | | | | | | | | | | 9. | | 10. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1. Whilst coupling or un-coupling Vehicles. | | 2. By coming in contact whilst riding on Vehicles with other Vehicles, &c., standing on adjacent Lines. | | 3. Whilst passing over, under, or standing upon, Buffers. | | 4. When getting on or off, or falling off, Engines, Waggons, &c. | | 5. Whilst braking, spragging, or chocking Wheels, | | 6. Whilst attending to Ground Points. | | 7. Whilst moving Vehicles by Capstans, Turn-tables, Props, Levers, &c. | | 8. By other Accidents not included in the preceding. | | By falling off Trains, Engines, &c., in Motion. | | (When getting on or off Engines, Vans, &c., during the running of Trains. | |
| | K.* | I.† | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. |
| SCOTLAND. | | | | | | | | | | | | | | | | | | | | |
| Caledonian ... ... ... ... | ... | 20 | ... | 1 | 2 | 10 | 1 | 21 | ... | 20 | 1 | 3 | ... | 8 | 1 | 16 | ... | 5 | ... | 7 |
| Caledonian and North British Joint | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | . | ... | ... | ... | ... | ... |
| Dumbarton and Balloch Joint ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | ... | 1 |
| Dundee and Arbroath Joint ... ... | 1 | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Glasgow and Paisley Joint ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... |
| Glasgow and South-Western ... | 1 | 4 | ... | ... | ... | 1 | ... | ... | ... | 1 | ... | ... | 1 | 3 | ... | 1 | ... | ... | ... | 3 |
| Glasgow, Barrhead, and Kilmarnock Joint. | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Great North of Scotland ... ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
| Highland ... ... ... ... | ... | 1 | ... | ... | .. | 1 | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | 2 | ... | ... | 2 | 1 |
| North British ... ... ... ... | 1 | 27 | ... | 2 | 2 | 9 | 1 | 11 | ... | 12 | ... | 6 | ... | 11 | 3 | 18 | ... | 4 | ... | 10 |
| Portpatrick and Wigtownshire Joint | ... | 1 | ... | ... | ... | ... | ... | .. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| TOTAL, SCOTLAND ... ... | 5 | 54 | ... | 3 | 4 | 21 | 2 | 36 | ... | 35 | 1 | 9 | 1 | 23 | 5 | 38 | ... | 9 | 2 | 22 |
| IRELAND. | | | | | | | | | | | | | | | | | | | | |
| Belfast and County Down ... ... | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | .. | ... | ... | ... | ... | .. | ... |
| Belfast and Northern Counties ... | ... | ... | ... | 1 | 1 | 2 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| Cavan and Leitrim ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Cork, Bandon, and South Coast ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | ... | ... | ... | ... | 1 | ... | ... | ... |
| Dublin, Wicklow, and Wexford ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... |
| Dundalk, Newry, and Greenore ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | .. | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Great Northern ... ... ... | ... | 4 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | 2 | ... | ... | ... | ... |
| Great Southern and Western ... | ... | 2 | ... | ... | ... | ... | 1 | 2 | ... | 3 | ... | 1 | ... | 3 | ... | 1 | ... | 1 | ... | ... |
| Midland Great Western ... ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... |
| Waterford and Central Ireland ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... |
| Waterford, Dungarvan, and Lismore | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Waterford, Limerick and Western ... | ... | 1 | ... | ... | 1 | ... | ... | ... | ... | ... | .. | ... | ... | ... | ... | 1 | ... | .. | ... | ... |
| TOTAL, IRELAND ... ... | 1 | 9 | ... | 1 | 2 | 2 | 1 | 5 | ... | 3 | ... | 1 | 1 | 5 | 1 | 6 | 2 | 1 | ... | 1 |
| TOTAL, UNITED KINGDOM ... | 19 | 492 | 3 | 27 | 13 | 90 | 8 | 410 | 4 | 328 | 3 | 79 | 5 | 368 | 42 | 606 | 10 | 59 | 8 | 173 |

* Killed. † Injured.

## TABLE No. 5—*continued.*

RAILWAYS in the UNITED KINGDOM from the RUNNING of TRAINS or the MOVEMENT of RAILWAY VEHICLES ending 31st December 1897—*continued.*

### B. SERVANTS of COMPANIES and CONTRACTORS—*continued.*

| 11. | | 12. | | 13. | | 14. | | 15. | | | | 16. | | 17. | | 18. | | 19. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| By coming in contact with Over-bridges or Erections on the Sides of the Line. | | Whilst attending to, or by the Failure of, Machinery, &c., of Engines in Motion. | | Whilst working on the Permanent-Way, Sidings, &c. | | Whilst attending to Gates at Level Crossings. | | Whilst walking, crossing, or standing on the Line on Duty. | | | | From being caught between Vehicles. | | From falling or being caught between Trains and Platforms, Walls, &c. | | Whilst walking, &c., along the Line to or from Work. | | Miscellaneous. | | TOTAL. | |
| | | | | | | | | (*a.*) At Stations. | | (*b.*) At other Parts of the Line. | | | | | | | | | | | |
| K.* | I.† | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. |
| 1 | 5 | ... | 20 | 10 | 17 | 1 | ... | 5 | 10 | 1 | 1 | 1 | 4 | ... | 1 | 4 | 5 | 2 | 6 | 30 | 180 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | . | ... | ... | 3 |
| ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | . | ... | ... | ... | ... | ... | 2 |
| 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | .. | ... | .. | ... | 3 | 1 |
| ... | ... | ... | ... | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 4 | 1 |
| ... | 1 | ... | ... | 2 | ... | ... | ... | 2 | 1 | ... | ... | ... | ... | ... | .. | ... | ... | ... | ... | 6 | 15 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | 1 |
| ... | ... | ... | ... | 1 | ... | 1 | ... | 1 | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 5 | 3 |
| ... | ... | ... | 1 | 1 | 1 | ... | ... | 1 | 2 | ... | ... | ... | ... | ... | 1 | 1 | 1 | 1 | ... | 6 | 13 |
| ... | 11 | ... | 16 | 4 | 8 | ... | ... | 8 | 4 | ... | 2 | 1 | 3 | 1 | 3 | 2 | 4 | 3 | 4 | 26 | 165 |
| . | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | 1 |
| 2 | 17 | ... | 37 | 19 | 27 | 2 | ... | 19 | 19 | 1 | 3 | 2 | 7 | 1 | 5 | 10 | 10 | 6 | 10 | 82 | 385 |
| ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | . . | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 4 |
| 1 | ... | ... | ... | ... | ... | .. | .. | 1 | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | 3 | 7 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 2 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | 2 | ... | ... | ... | 5 | 2 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| ... | 1 | ... | 1 | 1 | 1 | 1 | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4 | 10 |
| ... | ... | ... | 1 | 3 | ... | ... | ... | .. | ... | ... | ... | ... | 1 | 1 | 1 | 1 | ... | ... | ... | 6 | 16 |
| ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | . . | ... | ... | ... | 1 | ... | ... | ... | 1 | 4 |
| ... | ... | ... | ... | ... | ... | ... | | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... |
| ... | ... | ... | 1 | ... | ... | ... | ... | 1 | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | 2 | 4 |
| 1 | 2 | ... | 3 | 4 | 2 | 1 | ... | 3 | 2 | ... | ... | ... | 4 | 2 | 2 | 4 | ... | 1 | 1 | 24 | 50 |
| 8 | 72 | 2 | 365 | 104 | 196 | 8 | 6 | 99 | 187 | 20 | 27 | 27 | 96 | 21 | 62 | 71 | 57 | 26 | 289 | 501 | 3,989 |

* Killed. † Injured.

## NUMBER OF PERSONS KILLED OR INJURED BY THE RUNNING OF TRAINS OR THE MOVEMENT OF RAILWAY VEHICLES.

### TABLE No. 5—*continued.*

NUMBER of PERSONS reported to the BOARD OF TRADE as having been KILLED or INJURED upon the several RAILWAYS in the UNITED KINGDOM from the RUNNING of TRAINS or the MOVEMENT of RAILWAY VEHICLES during the Year ending 31st December 1897—*continued.*

### C. OTHER PERSONS.

| NAME OF COMPANY. | LEVEL CROSSINGS. | | | | | | | | Trespassers. | | Suicides and attempted Suicides. | | Persons on Business at Sidings and Stations. | | Miscellaneous. | | GRAND TOTAL. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Public. | | Occupation. | | Foot. | | TOTAL. | | | | | | | | | | | |
| | K.* | I.† | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. |
| ENGLAND AND WALES. | | | | | | | | | | | | | | | | | | |
| Barry ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... | .. | 2 |
| Brecon and Merthyr Tydfil Junction. | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| Cambrian ... ... ... | 1 | ... | ... | ... | ... | .. | 1 | ... | 2 | ... | ... | ... | 1 | 1 | ... | ... | 4 | 1 |
| Cardiff (late Bute Docks)... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | .. | 1 | 1 |
| Cheshire Lines ... ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 2 | ... | ... | 3 | ... | ... | 3 | 3 |
| Cleator and Workington Junction. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 |
| East and West Junction ... | ... | ... | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| Furness ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | 2 |
| Great Central ... ... | 3 | ... | 2 | ... | 1 | ... | 6 | ... | 5 | 2 | 3 | ... | 1 | 4 | ... | ... | 15 | 6 |
| Great Eastern ... ... | 7 | 3 | ... | ... | 1 | ... | 8 | 3 | 6 | 2 | 8 | 4 | ... | 7 | 1 | 1 | 23 | 17 |
| Great Northern ... ... | 3 | 1 | ... | ... | ... | ... | 3 | 1 | 7 | 2 | 6 | 1 | 2 | 4 | 1 | ... | 19 | 8 |
| Great Northern and Great Eastern Joint. | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | 1 | 1 |
| Great Northern and London and North-Western Joint. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | ... |
| Great Western .. ... | 2 | ... | 2 | 2 | 3 | ... | 7 | 2 | 27 | 19 | 15 | 1 | 3 | 16 | 2 | 1 | 54 | 39 |
| Hull, Barnsley, and West Riding Junction. | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | 1 | ... | ... | 1 | 1 |
| Lancashire and Yorkshire | 5 | ... | 1 | ... | 2 | ... | 8 | ... | 9 | 5 | 7 | 1 | 3 | 8 | 2 | ... | 29 | 14 |
| Lancashire and Yorkshire and London and North-Western Joint. | ... | 1 | ... | ... | ... | ... | ... | 1 | 1 | 2 | ... | ... | ... | 1 | ... | ... | 1 | 4 |
| Lancashire, Derbyshire and East Coast. | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 |
| London and India Docks... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 |
| London and North-Western | 3 | 3 | 1 | ... | 1 | ... | 5 | 3 | 16 | 9 | 18 | 2 | 2 | 13 | ... | 1 | 41 | 28 |
| London and North-Western and Great Western Joint. | ... | ... | ... | ... | 1 | ... | 1 | ... | 1 | 1 | .. | 1 | ... | 1 | ... | ... | 2 | 3 |
| London and South-Western | 1 | 1 | 1 | ... | ... | ... | 2 | 1 | 10 | 7 | 14 | 1 | 5 | 7 | 1 | .. | 32 | 16 |
| London, Brighton, and South Coast. | ... | ... | 2 | ... | ... | ... | 2 | ... | 6 | 1 | 5 | ... | ... | 1 | ... | ... | 13 | 2 |
| London, Chatham, and Dover. | ... | ... | ... | ... | 1 | ... | 1 | ... | 4 | ... | 3 | ... | ... | 2 | ... | ... | 8 | 2 |
| London, Tilbury, and Southend. | ... | ... | ... | ... | 2 | ... | 2 | ... | 7 | 1 | 2 | ... | ... | 1 | ... | ... | 11 | 2 |
| Manchester and Milford ... | ... | ... | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| Manchester, Sheffield, and Lincolnshire. (*See* Great Central). | | | | | | | | | | | | | | | | | | |
| Manchester Ship Canal ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | 2 | ... |
| Metropolitan ... ... | ... | 1 | ... | ... | ... | ... | ... | 1 | 2 | 1 | 2 | ... | ... | ... | ... | ... | 4 | 2 |
| Metropolitan and Metropolitan District Joint. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | 1 | 1 | 1 |
| Metropolitan District ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | ... | 1 | ... | 3 |
| Midland ... ... ... | 4 | 1 | 2 | 1 | 1 | ... | 7 | 2 | 22 | 12 | 5 | 3 | 1 | 18 | 2 | ... | 37 | 35 |
| Midland and Great Northern Joint. | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 3 | ... | ... | ... | ... | ... | 4 | ... |
| Midland and London and North-Western Joint. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | ... |
| Midland and South-Western Junction. | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | 2 |
| North-Eastern ... ... | 4 | 2 | 4 | 3 | ... | 1 | 8 | 6 | 28 | 16 | 4 | ... | 3 | 6 | 2 | 2 | 45 | 30 |
| North London ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | 1 | 2 | 1 |
| North Staffordshire ... | ... | ... | 2 | ... | ... | ... | 2 | ... | 3 | ... | 1 | ... | ... | ... | ... | ... | 6 | ... |
| Oldham, Ashton-under-Lyne and Guide Bridge Junction. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | ... |
| Otley and Ilkley Joint ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| Rhondda and Swansea Bay | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 |
| Rhymney ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 2 | ... | ... | ... | ... | ... | ... | 1 | 2 |
| Rhymney and Great Western Joint. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | ... |
| Severn and Wye and Severn Bridge Joint. | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| Sheffield and Midland Joint | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | 1 | ... | ... | 2 | 1 |
| Somerset and Dorset Joint | ... | ... | 1 | ... | ... | ... | 1 | ... | ... | ... | 2 | ... | ... | ... | ... | ... | 3 | ... |

* Killed. † Injured.

## NUMBER OF PERSONS KILLED OR INJURED BY THE RUNNING OF TRAINS OR THE MOVEMENT OF RAILWAY VEHICLES.

### TABLE No. 5—*continued.*

NUMBER of PERSONS reported to the BOARD OF TRADE as having been KILLED or INJURED upon the several RAILWAYS in the UNITED KINGDOM from the RUNNING of TRAINS or the MOVEMENT of RAILWAY VEHICLES during the Year ending 31st December 1897—*continued.*

### C. OTHER PERSONS—*continued.*

| NAME OF COMPANY. | LEVEL CROSSINGS. | | | | | | | | Trespassers. | | Suicides and attempted Suicides. | | Persons on Business at Sidings and Stations. | | Miscellaneous. | | GRAND TOTAL. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Public. | | Occupation. | | Foot. | | TOTAL. | | | | | | | | | | | |
| | K.* | I.† | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. | K. | I. |
| **ENGLAND AND WALES**—*cont.* | | | | | | | | | | | | | | | | | | |
| **South-Eastern** ... ... | 3 | 3 | ... | ... | ... | ... | 3 | 3 | 5 | 3 | 8 | 1 | ... | 4 | 1 | ... | 17 | 11 |
| **Swinton and Knottingley Joint.** | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| **Taff Vale** ... ... ... | 2 | ... | ... | ... | ... | ... | 2 | ... | 3 | 1 | ... | ... | ... | 1 | ... | ... | 5 | 2 |
| **West London Extension Joint.** | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 |
| **Wirral** ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | 1 | 1 |
| **Wrexham, Mold and Connah's Quay.** | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| TOTAL, ENGLAND AND WALES ... ... | 39 | 17 | 20 | 6 | 13 | 1 | 72 | 24 | 176 | 99 | 114 | 15 | 24 | 102 | 12 | 9 | 398 | 249 |
| SCOTLAND. | | | | | | | | | | | | | | | | | | |
| **Caledonian** ... ... ... | ... | 1 | 1 | ... | ... | ... | 1 | 1 | 20 | 14 | 6 | ... | 7 | 4 | ... | 1 | 34 | 20 |
| **Dumbarton and Balloch Joint.** | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | 2 | ... |
| **Dundee and Arbroath Joint** | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | ... | ... | ... | 2 | ... |
| **Glasgow and Paisley Joint** | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 2 | ... | ... | ... | 3 |
| **Glasgow and South-Western** | 1 | ... | ... | ... | ... | ... | 1 | ... | 10 | 4 | 1 | ... | ... | ... | ... | 1 | 12 | 5 |
| **Glasgow, Barrhead and Kilmarnock Joint.** | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| **Great North of Scotland** ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 2 | ... | ... | ... | ... | ... | ... | 1 | 2 |
| **Highland** ... ... ... | ... | ... | 1 | ... | ... | ... | 1 | ... | 1 | 2 | 1 | ... | ... | 1 | ... | ... | 3 | 3 |
| **North British** ... ... | ... | ... | 1 | ... | ... | ... | 1 | ... | 21 | 20 | 8 | 2 | 1 | 9 | ... | 4 | 31 | 35 |
| TOTAL, SCOTLAND ... | 1 | 1 | 3 | ... | ... | ... | 4 | 1 | 57 | 43 | 16 | 2 | 9 | 16 | ... | 6 | 86 | 68 |
| IRELAND. | | | | | | | | | | | | | | | | | | |
| **Belfast and County Down** | ... | ... | ... | ... | 2 | ... | 2 | ... | 2 | ... | ... | ... | ... | ... | ... | ... | 4 | ... |
| **Belfast and Northern Counties.** | ... | ... | ... | ... | ... | ... | ... | ... | 4 | ... | ... | ... | 2 | ... | ... | ... | 6 | ... |
| **Cavan and Leitrim**... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 |
| **Clogher Valley** ... ... | ... | ... | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | 1 | ... | ... | ... | ... | 1 | 1 |
| **Cork and Muskerry Light** | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| **Donegal** ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| **Dublin, Wicklow, and Wexford.** | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| **Great Northern** ... ... | 1 | ... | ... | ... | ... | ... | 1 | ... | 5 | ... | ... | ... | ... | 1 | ... | ... | 6 | 1 |
| **Great Southern and Western** | ... | ... | ... | ... | ... | ... | ... | ... | 4 | ... | 1 | ... | ... | 1 | ... | ... | 5 | 1 |
| **Midland Great Western** ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | 1 | ... | ... | ... | 3 | ... |
| **Waterford, Limerick, and Western.** | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | 1 | ... | ... | 1 | ... | ... | 3 | 1 |
| TOTAL, IRELAND ... | 1 | ... | 1 | ... | 2 | ... | 4 | ... | 22 | ... | 2 | 1 | 3 | 4 | ... | ... | 31 | 5 |
| TOTAL, UNITED KINGDOM ... ... ... | **41** | **18** | **24** | **6** | **15** | **1** | **80** | **25** | **255** | **142** | **132** | **18** | **36** | **122** | **12** | **15** | **515** | **322** |

* Killed. † Injured

## NATURE OF INJURIES TO PERSONS FROM ACCIDENTS TO TRAINS AND FROM THE MOVEMENT OF RAILWAY VEHICLES.

### TABLE No. 6.

NUMBER of PASSENGERS, SERVANTS of the COMPANIES and of CONTRACTORS, and OTHER PERSONS reported to the BOARD OF TRADE by RAILWAY COMPANIES as having been KILLED or INJURED in the UNITED KINGDOM, in ACCIDENTS to TRAINS and by the MOVEMENT of RAILWAY VEHICLES during the Year ending 31st December 1897, classified according to the NATURE of the INJURIES; with figures for the Year 1896.

| — | | NATURE OF INJURIES. | | | | | | | | | | | | | | | | Total Injuries. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Injuries resulting in Loss of | | | Fractures of | | | | | | Contusions of | | | | | | | |
| | Fatal. | Legs or Feet. | Arms or Hands. | Fingers or Toes. | Skull. | Legs or Arms. | Collar Bones or Ribs. | Other Bones. | Dislocations. | Internal Injuries. | Head or Body. | Limbs. | Scalds or Burns | Sprains. | Cuts or Lacerations. | Shock to System. | Miscellaneous Injuries. | |
| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. | 15. | 16. | 17. | |
| **Passengers:** | | | | | | | | | | | | | | | | | | |
| 1897 ... ... ... | 133 | 4 | 4 | 3 | 6 | 39 | 16 | 14 | 12 | 17 | 145 | 238 | 1 | 40 | 249 | 244 | 607 | 1,639 |
| 1896 ... ... ... | 93 | 6 | 5 | ... | 4 | 35 | 7 | 8 | 12 | 16 | 138 | 255 | 3 | 35 | 253 | 152 | 657 | 1,586 |
| **Servants of the Companies and Contractors:** | | | | | | | | | | | | | | | | | | |
| 1897 ... ... ... | 510 | 36 | 26 | 24 | 14 | 91 | 70 | 60 | 37 | 65 | 362 | 925 | 118 | 448 | 329 | 64 | 1,460 | 4,129 |
| 1896 ... ... ... | 447 | 35 | 14 | 30 | 11 | 112 | 71 | 39 | 37 | 76 | 368 | 960 | 95 | 453 | 317 | 49 | 1,319 | 3,986 |
| (For details, *see* Table No. 7.) | | | | | | | | | | | | | | | | | | |
| **Other Persons:** | | | | | | | | | | | | | | | | | | |
| Persons having business at the stations 1897 | 36 | 1 | ... | ... | ... | 6 | 5 | 1 | 1 | 4 | 21 | 36 | ... | 3 | 12 | 1 | 31 | 122 |
| Persons having business at the stations 1896 | 33 | 1 | 1 | ... | ... | 7 | 5 | 2 | ... | 6 | 26 | 28 | ... | 2 | 10 | 3 | 30 | 121 |
| Trespassers ... 1897 | 255 | 11 | 9 | ... | ... | 9 | 4 | 2 | ... | 3 | 14 | 21 | ... | ... | 18 | 2 | 49 | 142 |
| Trespassers ... 1896 | 261 | 6 | 5 | 2 | 1 | 10 | 5 | 1 | ... | 1 | 11 | 19 | 1 | ... | 10 | 1 | 37 | 110 |
| Others ... ... 1897 | 231 | 5 | 2 | 1 | ... | 6 | 3 | 2 | ... | 5 | 4 | 5 | 1 | ... | 9 | 5 | 22 | 70 |
| Others ... ... 1896 | 174 | 1 | 4 | ... | ... | 3 | 2 | ... | ... | 3 | 9 | 3 | ... | ... | 11 | 4 | 34 | 74 |
| (Including accidents at level crossings, suicides, and accidents to other persons not coming in any of the above classifications) | | | | | | | | | | | | | | | | | | |
| TOTAL ... 1897 | 1,165 | 57 | 41 | 28 | 20 | 151 | 98 | 79 | 50 | 94 | 546 | 1,225 | 120 | 491 | 617 | 316 | 2,169 | 6,102 |
| TOTAL ... 1896 | 1,008 | 49 | 29 | 32 | 16 | 167 | 90 | 50 | 49 | 102 | 552 | 1,265 | 99 | 490 | 601 | 209 | 2,077 | 5,877 |

## NATURE OF ORDINARY EMPLOYMENT OF SERVANTS OF THE COMPANIES KILLED OR INJURED IN ACCIDENTS TO TRAINS, AND BY THE MOVEMENT OF RAILWAY VEHICLES.

## TABLE No. 7.

ATEMENT showing the NUMBER of SERVANTS of the COMPANIES and of CONTRACTORS reported to the BOARD of TRADE as having been KILLED or INJURED in ACCIDENTS to TRAINS, and by the RUNNING of TRAINS or the MOVEMENT of RAILWAY VEHICLES during the Year ending 31st December 1897, classified according to the NATURE of the EMPLOYMENT and AGE of the persons injured, and the NATURE of the INJURIES ; and also the total number of Persons employed in each Class of Service.

| NATURE OF EMPLOYMENT. | NATURE OF INJURIES. | | | | | | | | | | | | | | | | | Total Injured. | Number of Persons Employed. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Injuries resulting in loss of | | | Fractures of | | | | Dislocations. | Internal Injuries. | Contusions of | | Scalds or Burns | Sprains | Cuts or Lacerations. | Shock to System. | Miscellaneous Injuries. | | |
| | Fatal. | Legs or Feet. | Arms or Hands. | Toes or Fingers. | Skull. | Legs or Arms. | Collar Bones or Ribs. | Other Bones | | | Head or Body. | Limbs | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | | |
| Brakesmen. (*See Goods Guards.*) | | | | | | | | | | | | | | | | | | | |
| Capstanmen ... | ... | ... | 1 | ... | ... | ... | 2 | 1 | ... | 1 | 3 | 36 | ... | 5 | 3 | ... | 50 | 102 | 799 |
| Capstan-lads ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 6 | ... | 1 | 1 | ... | 6 | 14 | 148 |
| Carmen ... ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 5 | ... | 1 | 1 | ... | 2 | 12 | 12,887 |
| Carriage Cleaners : | | | | | | | | | | | | | | | | | | | |
| (1) Men... ... | 4 | 2 | ... | ... | 1 | 1 | 2 | ... | ... | ... | 4 | 9 | ... | 1 | 8 | ... | 12 | 40 | 3,179 |
| (2) Boys ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | 1 | 3 | 231 |
| Carriage or Waggon Examiners. | 7 | ... | ... | ... | 1 | 1 | ... | 1 | ... | ... | 1 | 3 | 1 | ... | 2 | 2 | 12 | 24 | 2,825 |
| Checkers ... ... | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 2 | 5 | 1 | ... | 2 | ... | 10 | 21 | 6,120 |
| Chockers, Chain-boys, and Slippers : | | | | | | | | | | | | | | | | | | | |
| (1) Men... ... | 1 | ... | ... | ... | ... | 1 | 2 | ... | 1 | 1 | 4 | 14 | ... | 1 | 1 | ... | 13 | 38 | 406 |
| (2) Boys ... | 2 | ... | ... | ... | ... | 1 | ... | ... | 1 | 2 | 1 | 12 | ... | 1 | 1 | ... | 10 | 29 | 510 |
| Clerks : | | | | | | | | | | | | | | | | | | | |
| (1) Men... ... | 3 | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | 3 | ... | ... | ... | ... | ... | 1 | 6 | 38,461 |
| (2) Boys ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | 2 | 5 | 7,312 |
| Engine Cleaners : | | | | | | | | | | | | | | | | | | | |
| (1) Men... ... | 11 | ... | ... | ... | ... | 2 | 1 | ... | ... | 1 | 4 | 11 | 5 | 4 | 7 | ... | 25 | 60 | 14,149 |
| (2) Boys ... | 4 | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | 2 | 4 | 1 | ... | ... | ... | 12 | 21 | 3,271 |
| Engine Drivers ... | 20 | 1 | 2 | 2 | ... | 5 | 5 | 7 | 6 | 7 | 27 | 33 | 51 | 31 | 36 | 12 | 128 | 353 | 19,281 |
| Firemen ... ... | 21 | 4 | 2 | 7 | 2 | 8 | 1 | 1 | 5 | 5 | 34 | 93 | 45 | 36 | 67 | 10 | 183 | 503 | 19,264 |
| Gatekeepers ... | 7 | ... | ... | ... | ... | ... | ... | 2 | ... | ... | 1 | ... | ... | ... | ... | 1 | 1 | 5 | 3,292 |
| Greasers : | | | | | | | | | | | | | | | | | | | |
| (1) Men... ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 2 | ... | ... | 1 | ... | 1 | 7 | 1,170 |
| (2) Boys ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 2 | ... | ... | ... | ... | 2 | 5 | 491 |
| Guards (Goods) and Brakesmen. | 45 | 9 | 4 | 1 | ... | 16 | 12 | 7 | 4 | 7 | 61 | 167 | 6 | 156 | 54 | 13 | 262 | 779 | 11,881 |
| Guards, Passenger | 6 | ... | ... | ... | ... | 2 | 2 | 3 | 3 | 1 | 11 | 16 | ... | 15 | 14 | 6 | 36 | 109 | 6,357 |
| Horse Drivers ... | 5 | ... | 1 | ... | ... | 1 | 3 | 1 | ... | 2 | 10 | 24 | ... | 8 | 5 | ... | 29 | 84 | 2,299 |
| Inspectors, Permanent-way. | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | 2 | ... | 2 | 6 | 940 |
| Inspectors, Others... | 1 | ... | 1 | ... | ... | ... | 1 | 1 | 1 | ... | 3 | 5 | ... | 4 | 2 | 1 | 9 | 28 | 5,865 |
| Labourers ... ... | 42 | 3 | 5 | ... | 3 | 6 | 5 | 4 | 2 | 4 | 21 | 29 | ... | 6 | 18 | 1 | 53 | 160 | 45,882 |
| Lampmen ... ... | 5 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | 4 | 6 | 1,685 |
| Lamp-lads ... ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 2 | ... | ... | ... | ... | ... | 3 | 320 |
| Loaders and Sheeters | 1 | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | 7 | ... | 2 | 2 | ... | 11 | 24 | 2,983 |
| Mechanics ... ... | 12 | ... | ... | ... | ... | ... | 1 | 2 | 2 | 1 | 8 | 13 | ... | ... | 1 | ... | 11 | 39 | 69,227 |
| Messengers : | | | | | | | | | | | | | | | | | | | |
| (1) Men... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | 2 | 3 | 1,059 |
| (2) Boys ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | 1 | 4 | 1,572 |
| Number Takers ... | 3 | ... | ... | 1 | 1 | 1 | ... | ... | ... | ... | 1 | 3 | ... | ... | ... | ... | 1 | 8 | 1,328 |
| Permanent-way Men | 111 | 5 | 2 | 1 | 4 | 5 | 5 | 8 | 2 | 1 | 18 | 33 | 1 | 11 | 20 | 3 | 71 | 190 | 58,781 |
| Pointsmen ... ... | 3 | ... | ... | 2 | ... | ... | ... | ... | ... | 1 | 3 | 7 | ... | 2 | 1 | ... | 5 | 21 | 697 |
| Policemen ... ... | ... | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | 4 | 7 | 1,674 |
| Porters : | | | | | | | | | | | | | | | | | | | |
| (1) Men... ... | 63 | 3 | 3 | 4 | 2 | 18 | 14 | 16 | 4 | 11 | 67 | 175 | 3 | 46 | 33 | 3 | 183 | 585 | 42,937 |
| (2) Boys ... | 6 | ... | 1 | ... | ... | ... | 1 | ... | ... | 1 | 1 | 6 | ... | ... | ... | ... | 4 | 14 | 2,759 |
| Shunters ... ... | 35 | 2 | 1 | 2 | ... | 5 | 4 | 2 | 2 | 10 | 41 | 150 | 3 | 103 | 28 | 7 | 225 | 585 | 7,092 |
| Signal Fitters ... | 5 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 4 | ... | 1 | 1 | ... | 3 | 12 | 1,960 |
| Signalmen ... ... | 14 | 2 | ... | ... | ... | 1 | 1 | ... | 2 | 2 | 1 | 2 | ... | 3 | 2 | ... | 13 | 29 | 23,684 |
| Signal Box Lads ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 2 | 3 | 1,513 |
| Station Masters ... | 6 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | 4 | ... | 1 | ... | ... | 5 | 12 | 7,410 |
| Ticket Collectors ... | 4 | 1 | ... | ... | ... | 2 | 2 | ... | ... | ... | 1 | 3 | ... | 2 | 1 | 1 | 2 | 15 | 2,795 |
| Van Lads ... ... | 3 | 1 | ... | 1 | ... | 1 | ... | ... | ... | 1 | 2 | 1 | ... | ... | 1 | ... | 2 | 10 | 5,214 |
| Watchmen ... ... | 2 | ... | 1 | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 867 |
| Yardsmen ... ... | 8 | ... | ... | 2 | ... | 1 | 1 | ... | ... | 1 | 1 | 7 | ... | 1 | 3 | ... | 15 | 32 | 1,837 |
| Miscellaneous : | | | | | | | | | | | | | | | | | | | |
| (1) Men... ... | 22 | 1 | ... | 1 | ... | 3 | 1 | 1 | 1 | 3 | 6 | 17 | 1 | 5 | 8 | 1 | 17 | 66 | 18,658 |
| (2) Boys ... | 2 | 1 | 1 | ... | ... | ... | ... | ... | 1 | ... | 2 | 8 | ... | ... | 1 | ... | 6 | 20 | 2,040 |
| **Total of Railway Servants.** | **492** | **36** | **26** | **24** | **14** | **87** | **69** | **59** | **37** | **63** | **360** | **922** | **118** | **448** | **329** | **63** | **1449** | **4,104** | **465,112** |
| Contractors' Servants : | | | | | | | | | | | | | | | | | | | |
| (1) Men... ... | 18 | ... | ... | ... | ... | 3 | 1 | 1 | ... | 2 | 2 | 3 | ... | ... | ... | 1 | 11 | 24 | |
| (2) Boys ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | |
| **Total of Contractors' Servants.** | **18** | ... | ... | ... | ... | **4** | **1** | **1** | ... | **2** | **2** | **3** | ... | ... | ... | **1** | **11** | **25** | |
| **Total of Railway and Contractors' Servants.** | **510** | **36** | **26** | **24** | **14** | **91** | **70** | **60** | **37** | **65** | **362** | **925** | **118** | **448** | **329** | **64** | **1460** | **4,129** | |

# NUMBER OF PERSONS KILLED OR INJURED ON RAILWAY PREMISES OTHERWISE

## TABLE No. 8.

SUMMARY STATEMENT OF THE NUMBER of PASSENGERS, SERVANTS of the COMPANIES and KILLED or INJURED, in each DIVISION of the UNITED KINGDOM, otherwise than in ACCIDENTS COMPANIES in the Year ending 31st DECEMBER 1897, with corresponding figures for the

| | 1897. | | | | | |
|---|---|---|---|---|---|---|
| | ENGLAND AND WALES. | | SCOTLAND. | | IRELAND. | |
| | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. |
| PASSENGERS :— | | | | | | |
| A. Whilst ascending or descending steps at stations | 1 | 274 | 1 | 11 | ... | 1 |
| B. By being struck by barrows, by falling over packages, &c., on station platforms. | ... | 62 | ... | ... | ... | ... |
| C. From falling off platforms on to the ballast ... | ... | 84 | ... | 3 | ... | ... |
| D. By other accidents ... ... ... ... ... | ... | 148 | ... | 2 | ... | 1 |
| TOTAL OF PASSENGERS ... ... ... | 1 | 568 | 1 | 16 | ... | 2 |
| SERVANTS :— | | | | | | |
| 1. Whilst loading, unloading, or sheeting waggons, trucks, and horse-boxes. | 6 | 2,174 | 1 | 65 | ... | 13 |
| 2. Whilst moving goods and luggage in stations or sheds. | 2 | 859 | .. | 15 | ... | 2 |
| 3. Whilst working at cranes or capstans ... ... | ... | 237 | ... | 2 | ... | 2 |
| 4. By the falling of waggon-doors, lamps, bales of goods, &c. | ... | 726 | ... | 28 | ... | 11 |
| 5. Whilst attending to engines at rest ... ... | 1 | 1,133 | ... | 85 | ... | 3 |
| 6. From falling off, or when getting on or off engines or vehicles at rest. | 1 | 782 | 1 | 51 | ... | 11 |
| 7. From falling off platforms on to the ballast ... | ... | 274 | ... | 9 | ... | ... |
| 8. From falling off ladders, scaffolds, &c. ... ... | 30 | 371 | ... | 10 | ... | 4 |
| 9. By stumbling whilst walking on the line ... | ... | 589 | ... | 16 | ... | 2 |
| 10. By being trampled on or kicked by horses whilst engaged in railway work. | ... | 169 | ... | 3 | ... | ... |
| 11. From being struck by articles thrown from passing trains. | 1 | 11 | ... | ... | ... | ... |
| 12. From the falling of rails, sleepers, &c., when at work on the line. | 2 | 642 | ... | 9 | ... | 3 |
| 13. Otherwise injured when at work on the line or in sidings. | 5 | 1,111 | 1 | 19 | 1 | 1 |
| 14. Miscellaneous ... ... ... ... ... ... | 3 | 810 | 1 | 14 | ... | 7 |
| TOTAL OF SERVANTS ... ... ... | 51 | 9,888 | 4 | 326 | 1 | 59 |
| OTHER PERSONS :— | | | | | | |
| On business at stations and sidings ... ... | 12 | 260 | 2 | 18 | ... | 1 |
| Miscellaneous ... ... ... ... ... ... | 14 | 121 | 4 | 14 | ... | 1 |
| TOTAL OF OTHER PERSONS ... ... | 26 | 381 | 6 | 32 | ... | 2 |
| GRAND TOTAL ... ... ... ... ... | 78 | 10,837 | 11 | 374 | 1 | 63 |

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* NOTE.—The term "Railway Premises" includes stations, permanent-way, sidings, goods yards, and all other premises warehousing goods, repairing sheds.

## THAN IN ACCIDENTS TO TRAINS OR BY THE MOVEMENT OF RAILWAY VEHICLES.

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## TABLE No. 8.

of CONTRACTORS, and OTHER PERSONS reported to the BOARD OF TRADE as having been to TRAINS or by the MOVEMENT OF RAILWAY VEHICLES, on the PREMISES* of the RAILWAY UNITED KINGDOM for the Year 1896.

| 1897. | | 1896. | | |
|---|---|---|---|---|
| UNITED KINGDOM. | | UNITED KINGDOM. | | ——— |
| Killed. | Injured. | Killed. | Injured. | |
| | | | | PASSENGERS :— |
| 2 | 286 | 2 | 265 | A. Whilst ascending or descending steps at stations. |
| ... | 62 | ... | 77 | B. By being struck by barrows, by falling over packages, &c., on station platforms. |
| ... | 87 | 1 | 71 | C. From falling off platforms on to the ballast. |
| ... | 151 | 2 | 102 | D. By other accidents. |
| 2 | 586 | 5 | 515 | TOTAL OF PASSENGERS. |
| | | | | SERVANTS :— |
| 7 | 2,252 | 11 | 2.605 | 1. Whilst loading, unloading, or sheeting waggons, trucks, and horse-boxes. |
| 2 | 876 | 2 | 876 | 2. Whilst moving goods and luggage in stations or sheds. |
| ... | 241 | 1 | 181 | 3. Whilst working at cranes or capstans. |
| ... | 765 | 3 | 675 | 4. By the falling of waggon-doors, lamps, bales of goods, &c. |
| 1 | 1,221 | ... | 977 | 5. Whilst attending to engines at rest. |
| 2 | 844 | 4 | 763 | 6. From falling off, or when getting on or off engines or vehicles at rest. |
| ... | 283 | ... | 235 | 7. From falling off platforms on to the ballast. |
| 30 | 385 | 14 | 533 | 8. From falling off ladders, scaffolds, &c. |
| ... | 607 | ... | 567 | 9. By stumbling whilst walking on the line. |
| ... | 172 | 1 | 179 | 10. By being trampled on or kicked by horses whilst engaged in railway work. |
| 1 | 11 | ... | 9 | 11. From being struck by articles thrown from passing trains. |
| 2 | 654 | 1 | 513 | 12. From the falling of rails, sleepers, &c., when at work on the line. |
| 7 | 1,131 | 3 | 1.120 | 13. Otherwise injured when at work on the line or in sidings. |
| 4 | 831 | 3 | 891 | 14. Miscellaneous. |
| 56 | 10,273 | 43 | 10.124 | TOTAL OF SERVANTS. |
| | | | | OTHER PERSONS :— |
| 14 | 279 | 13 | 253 | On business at stations and sidings. |
| 18 | 136 | 24 | 110 | Miscellaneous. |
| 32 | 415 | 37 | 363 | TOTAL OF OTHER PERSONS. |
| 90 | 11,274 | 85 | 11,002 | GRAND TOTAL. |

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used for the purpose of working the railway, but does not include factories, workshops, buildings used exclusively for stables, hotels, and other similar premises.

## SERVANTS OF THE COMPANIES AND OF CONTRACTORS KILLED OR INJURED OTHERWISE

### TABLE No. 9.

NUMBER of SERVANTS of the COMPANIES and of CONTRACTORS reported by the several RAILWAY otherwise than in ACCIDENTS to TRAINS or by the MOVEMENT

| NAME OF COMPANY. | 1 Whilst loading, unloading, or sheeting Waggons. | | 2 Whilst moving Goods and Luggage in Stations or Sheds. | | 3 Whilst working at Cranes or Capstans. | | 4 By the falling of Waggon Doors, Lamps, Bales of Goods, &c. | | 5 Whilst attending to Engines at rest. | | 6 From falling off, or when getting on or off Engines or Vehicles at rest. | | 7 From falling off Platforms on to the Ballast. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. |
| **ENGLAND AND WALES.** | | | | | | | | | | | | | | |
| Ashby and Nuneaton Joint ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Barnsley Joint Station ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... |
| Barry ... ... ... ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Brecon and Merthyr Tydfil Junction. | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... |
| Brecon and Merthyr and London and North-Western Joint. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Cambrian ... ... ... ... | ... | 3 | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | 1 | ... | ... |
| Carlisle Citadel Station ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Cheshire Lines ... ... ... | ... | 22 | ... | 5 | ... | 1 | ... | 10 | ... | 2 | ... | 5 | ... | 1 |
| Corris ... ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| East London Joint ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Furness ... ... ... ... | ... | 6 | ... | 2 | ... | 2 | ... | 1 | ... | 1 | ... | ... | ... | ... |
| Great Central ... ... ... | ... | 25 | ... | 7 | ... | 8 | ... | 5 | ... | 29 | ... | 12 | ... | 3 |
| Great Eastern ... ... ... | 1 | 159 | ... | 50 | ... | 7 | ... | 45 | ... | 118 | ... | 59 | ... | 22 |
| Great Northern ... ... ... | 1 | 78 | ... | 53 | ... | 20 | ... | 69 | ... | 6 | ... | 62 | ... | 32 |
| Great Northern and Great Eastern Joint. | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Great Northern and London and North-Western Joint. | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Great Western ... ... ... | ... | 157 | ... | 42 | ... | 12 | ... | 64 | ... | 106 | ... | 50 | ... | 25 |
| Hull, Barnsley, and West Riding Junction. | ... | 5 | ... | ... | ... | 1 | ... | 2 | ... | ... | ... | 3 | ... | ... |
| Isle of Wight Central ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
| Lancashire and Yorkshire ... | ... | 300 | ... | 146 | ... | 28 | ... | 67 | 1 | 228 | 1 | 114 | ... | 29 |
| Lancashire and Yorkshire and London and North-Western Joint. | ... | 22 | ... | 4 | ... | 2 | ... | 7 | ... | 1 | ... | 7 | ... | 3 |
| Lancashire, Derbyshire, and East Coast. | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 |
| Liverpool, St. Helen's and South Lancashire. | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... |
| London and North-Western ... | 1 | 669 | ... | 243 | ... | 65 | ... | 204 | ... | 290 | ... | 149 | ... | 58 |
| London and North-Western and Great Western Joint. | ... | 21 | ... | 10 | ... | ... | ... | 4 | ... | ... | ... | 4 | ... | 3 |
| London and South-Western ... | ... | 93 | ... | 38 | ... | 4 | ... | 34 | ... | 41 | ... | 50 | ... | 17 |
| London and South-Western, and London, Brighton, and South Coast Joint. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| London, Brighton, and South Coast. | ... | 26 | ... | 6 | ... | 3 | ... | 6 | ... | 3 | ... | 7 | ... | 1 |
| London, Chatham, and Dover ... | 1 | 4 | ... | ... | ... | 1 | ... | 2 | ... | 8 | ... | 4 | ... | 3 |
| London, Tilbury, and Southend... | ... | ... | 1 | ... | ... | 1 | ... | 2 | ... | ... | ... | 1 | ... | ... |
| Macclesfield Committee ... ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Manchester, Sheffield, and Lincolnshire. (See Great Central.) | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Manchester Ship Canal ... ... | ... | 7 | ... | ... | ... | ... | ... | 2 | ... | 1 | ... | 1 | ... | ... |
| Manchester, South Junction, and Altrincham. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Marland Light ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Maryport and Carlisle ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Mersey ... ... ... ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 7 | ... | 1 | ... | 1 |
| Metropolitan ... ... ... | ... | 2 | ... | ... | ... | 1 | ... | 1 | ... | 7 | ... | 3 | ... | ... |
| Metropolitan District ... ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 4 | ... | ... | ... | 4 |
| Midland ... ... ... ... | 2 | 333 | 1 | 187 | ... | 48 | ... | 126 | ... | 127 | ... | 143 | ... | 41 |
| Midland and Great Northern Joint. | ... | 4 | ... | 3 | ... | 2 | ... | 2 | ... | ... | ... | ... | ... | 2 |
| Midland and Great Western Joint | ... | 1 | ... | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| Midland and Lancashire and Yorkshire Joint. | ... | 2 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| Midland and London and North-Western Joint. | ... | 3 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... |
| Midland and South-Western Junction. | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... |
| Neath and Brecon ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Newport (Alexandra Dock) ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... |
| Normanton Joint Station ... | ... | 1 | ... | 4 | ... | ... | ... | ... | ... | ... | ... | 2 | ... | 1 |
| North-Eastern ... ... ... | ... | 187 | ... | 41 | ... | 25 | ... | 54 | ... | 123 | ... | 70 | ... | 19 |
| *North London* ... ... ... | ... | 2 | ... | 2 | ... | 2 | ... | 3 | ... | 3 | ... | 4 | ... | 1 |

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* *NOTE.—The term "Railway Premises" includes stations, permanent-way, goods yards, sidings, and all other premises used for the* **sheds, stables, hotels, and**

THAN IN ACCIDENTS TO TRAINS OR BY THE MOVEMENT OF RAILWAY VEHICLES.

## TABLE No. 9.

COMPANIES to the BOARD OF TRADE as having been KILLED or INJURED upon their RAILWAY PREMISES* of RAILWAY VEHICLES, during the Year ending 31st December 1897.

| 8 From falling off Ladders, Scaffolds, &c. | | 9 By stumbling whilst walking on the Line. | | 10 By being trampled on and kicked by Horses whilst engaged in Railway Work. | | 11 By being struck by Articles thrown from passing Trains. | | 12 By the falling of Rails, Sleepers, &c., when at Work on the Line or in Sidings. | | 13 Otherwise Injured when at Work on the Line or in Sidings. | | 14 Miscellaneous. | | Total. | | NAME OF COMPANY. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Killed | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | |
| | | | | | | | | | | | | | | | | ENGLAND AND WALES. |
| ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | Ashby and Nuneaton Joint. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | Barnsley Joint Station. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | Barry. |
| ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | Brecon and Merthyr Tydfil Junction. |
| ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | Brecon and Merthyr and London and North-Western Joint. |
| ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | ... | 3 | ... | 2 | ... | 13 | Cambrian. |
| ... | ... | ... | ... | ... | ... | .. | ... | ... | ... | ... | ... | .. | 1 | ... | 1 | Carlisle Citadel Station. |
| 1 | 4 | ... | 2 | ... | 1 | ... | ... | ... | ... | 1 | 1 | ... | 4 | 2 | 58 | Cheshire Lines. |
| ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | Corris. |
| ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | East London Joint. |
| ... | 1 | ... | 2 | ... | ... | ... | ... | ... | 7 | ... | 11 | ... | ... | ... | 33 | Furness. |
| 1 | 4 | ... | 7 | ... | 1 | 1 | 1 | ... | 1 | ... | 1 | 1 | 7 | 3 | 111 | Great Central. |
| 1 | 25 | ... | 62 | ... | 16 | ... | 2 | ... | 56 | 1 | 179 | ... | 80 | 3 | 880 | Great Eastern. |
| 2 | 16 | ... | 47 | ... | 15 | ... | | ... | 34 | ... | 71 | ... | 60 | 3 | 563 | Great Northern. |
| ... | 1 | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | 1 | ... | 6 | Great Northern and Great Eastern Joint. |
| ... | ... | ... | ... | ... | ... | . | ... | ... | ... | ... | 1 | ... | ... | ... | 2 | Great Northern and London and North-Western Joint. |
| 14 | 39 | ... | 29 | ... | ... | ... | 2 | 1 | 92 | ... | 93 | ... | 35 | 15 | 746 | Great Western. |
| ... | .. | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | ... | 14 | Hull, Barnsley, and West Riding Junction. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | Isle of Wight Central. |
| 4 | 46 | ... | 83 | ... | 8 | ... | ... | ... | 47 | ... | 65 | ... | 73 | 6 | 1,234 | Lancashire and Yorkshire. |
| ... | 4 | ... | 1 | ... | 1 | ... | ... | ... | 1 | ... | 3 | ... | 3 | ... | 59 | Lancashire and Yorkshire and London and North-Western Joint. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | Lancashire, Derbyshire, and East Coast. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | Liverpool, St. Helen's and South Lancashire. |
| 1 | 84 | ... | 115 | ... | 3 | ... | ... | 1 | 239 | 2 | 353 | ... | 161 | 5 | 2,633 | London and North-Western. |
| ... | 5 | ... | 6 | ... | ... | ... | ... | ... | 17 | ... | 25 | ... | 7 | ... | 102 | London and North-Western and Great Western Joint. |
| ... | 24 | ... | 40 | ... | 1 | ... | 1 | ... | 31 | 1 | 66 | 2 | 26 | 3 | 466 | London and South-Western. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | London and South-Western, and London, Brighton, and South Coast Joint. |
| 1 | 2 | ... | 5 | ... | ... | ... | 1 | ... | 14 | ... | 29 | ... | 1 | 1 | 104 | London, Brighton, and South Coast. |
| ... | 4 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 4 | ... | 4 | 1 | 35 | London, Chatham, and Dover. |
| ... | 1 | ... | .. | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 2 | 1 | 8 | London, Tilbury, and Southend. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | Macclesfield Committee. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | Manchester, Sheffield, and Lincolnshire. (*See* Great Central.) |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 12 | Manchester Ship Canal. |
| ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | 3 | Manchester, South Junction, and Altrincham. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | Marland Light. |
| ... | 1 | ... | ... | ... | ... | ... | ... | ... | .. | ... | 1 | ... | ... | ... | 2 | Maryport and Carlisle. |
| ... | 2 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | 4 | ... | 18 | Mersey. |
| ... | 6 | ... | 3 | ... | ... | ... | ... | ... | 2 | ... | 5 | ... | 5 | ... | 35 | Metropolitan. |
| ... | 2 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 3 | ... | 2 | ... | 17 | Metropolitan District. |
| 3 | 53 | ... | 112 | ... | 96 | ... | 3 | ... | 56 | ... | 73 | ... | 234 | 6 | 1,632 | Midland. |
| ... | 1 | ... | ... | ... | ... | ... | ... | ... | 3 | ... | 2 | ... | 3 | ... | 22 | Midland and Great Northern Joint. |
| ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 7 | Midland and Great Western Joint. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4 | Midland and Lancashire and Yorkshire Joint. |
| ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 6 | Midland and London and North-Western Joint. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | Midland and South-Western Junction. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | Neath and Brecon. |
| ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | Newport (Alexandra Dock.) |
| ... | ... | ... | 8 | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 13 | Normanton Joint Station. |
| 1 | 27 | ... | 47 | ... | 21 | ... | 1 | ... | 20 | ... | 82 | ... | 65 | 1 | 782 | North-Eastern. |
| ... | 3 | ... | 2 | ... | ... | ... | ... | ... | 8 | ... | 4 | ... | 2 | ... | 36 | North London. |

## SERVANTS OF THE COMPANIES AND OF CONTRACTORS KILLED OR INJURED OTHERWISE

### TABLE No. 9—*continued.*

NUMBER of SERVANTS of the COMPANIES and of CONTRACTORS reported by the several RAILWAY otherwise than in ACCIDENTS to TRAINS or by the MOVEMENT

| NAME OF COMPANY. | 1<br>Whilst loading, unloading, or sheeting Waggons. | | 2<br>Whilst moving Goods and Luggage in Stations or Sheds. | | 3<br>Whilst working at Cranes or Capstans. | | 4<br>By the falling of Waggon Doors, Lamps, Bales of Goods, &c. | | 5<br>Whilst attending to Engines at rest. | | 6<br>From falling off, or when getting on or off Engines or Vehicles at rest. | | 7<br>From falling off Platforms on to the Ballast. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed | Injured. | Killed. | Injured. | Killed. | Injured. |
| ENGLAND AND WALES—*cont.* | | | | | | | | | | | | | | |
| North Staffordshire ... ... | ... | 5 | ... | ... | ... | ... | ... | 2 | ... | 1 | ... | ... | ... | ... |
| Oldham, Ashton-under-Lyne and Guide Bridge Junction | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Otley and Ilkley Joint ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Rhondda and Swansea Bay ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Rhymney ... ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... |
| Severn and Wye and Severn Bridge Joint. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Sheffield and Midland Joint ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | 1 |
| Somerset and Dorset Joint ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... |
| South-Eastern ... ... ... | ... | 28 | ... | 3 | ... | 1 | ... | 5 | ... | 12 | ... | 17 | ... | 4 |
| Taff Vale ... ... ... ... | ... | 2 | ... | 1 | ... | 1 | ... | 2 | ... | 12 | .. | 7 | ... | ... |
| Tottenham and Forest Gate Joint | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Tottenham and Hampstead Joint | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | .. | ... |
| West London Extension Joint ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Wigan ... ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| TOTAL, ENGLAND AND WALES | 6 | 2,174 | 2 | 859 | ... | 237 | ... | 726 | 1 | 1,133 | 1 | 782 | ... | 274 |
| SCOTLAND. | | | | | | | | | | | | | | |
| Caledonian ... ... ... ... | ... | 25 | ... | 12 | ... | 2 | ... | 13 | ... | 61 | 1 | 27 | ... | 5 |
| Dumbarton and Balloch Joint ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Dundee and Arbroath Joint ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... |
| Glasgow and Paisley Joint ... | .. | 7 | ... | 2 | ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... |
| Glasgow and South-Western ... | ... | 3 | ... | ... | ... | ... | ... | ... | ... | 2 | ... | 1 | ... | ... |
| Glasgow, Barrhead, and Kilmarnock Joint. | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... |
| Great North of Scotland ... ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| Highland ... ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| North British ... ... ... | ... | 28 | ... | 1 | ... | ... | ... | 12 | ... | 22 | ... | 21 | ... | 3 |
| Portpatrick and Wigtownshire Joint. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... |
| TOTAL, SCOTLAND ... ... | 1 | 65 | ... | 15 | ... | 2 | ... | 28 | ... | 85 | 1 | 51 | ... | 9 |
| IRELAND. | | | | | | | | | | | | | | |
| Belfast and County Down ... | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | ... | ... |
| Belfast and Northern Counties ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 3 | ... | ... |
| Cavan and Leitrim ... ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... |
| Cork, Bandon, and South Coast ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
| Dublin, Wicklow, and Wexford ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
| Dundalk, Newry, and Greenore... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Great Northern ... ... ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... | ... | 1 | ... | ... |
| Great Southern and Western ... | ... | 10 | ... | 1 | ... | ... | ... | 7 | ... | ... | ... | 4 | ... | ... |
| Midland Great Western ... ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | 2 | ... | ... |
| Waterford, Limerick, and Western | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| TOTAL, IRELAND ... ... | ... | 13 | ... | 2 | ... | 2 | ... | 11 | ... | 3 | ... | 11 | ... | ... |
| TOTAL, UNITED KINGDOM... | 7 | 2,252 | 2 | 876 | ... | 241 | ... | 765 | 1 | 1,221 | 2 | 844 | ... | 283 |

* NOTE.—The term "Railway Premises" includes stations, permanent-way, goods yards, sidings, and all other premises used for the sheds, stables, hotels, and

THAN IN ACCIDENTS TO TRAINS OR BY THE MOVEMENT OF RAILWAY VEHICLES.

## TABLE No. 9—*continued*.

COMPANIES to the BOARD OF TRADE as having been KILLED or INJURED upon their RAILWAY PREMISES* of RAILWAY VEHICLES, during the Year ending 31st December 1897.

| 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| From falling off Ladders, Scaffolds, &c. | | By stumbling whilst walking on the Line. | | By being trampled on and kicked by Horses whilst engaged in Railway Work. | | By being struck by Articles thrown from passing Trains. | | By the falling of Rails, Sleepers, &c., when at Work on the Line or in Sidings. | | Otherwise Injured when at work on the Line or in Sidings. | | Miscellaneous. | | Total. | | NAME OF COMPANY. |
| Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | Killed. | Injured. | |
| | | | | | | | | | | | | | | | | ENGLAND AND WALES—*cont.* |
| ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | 12 | North Staffordshire. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | 2 | Oldham, Ashton-under-Lyne, and Guide Bridge Junction. |
| ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 3 | Otley and Ilkley Joint. |
| ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 3 | Rhondda and Swansea Bay. |
| ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | Rhymney. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | Severn and Wye and Severn Bridge Joint. |
| ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 2 | ... | 7 | Sheffield and Midland Joint. |
| ... | ... | ... | 1 | ... | 1 | ... | ... | ... | 1 | ... | 3 | ... | 1 | ... | 11 | Somerset and Dorset Joint. |
| 1 | 3 | ... | 8 | ... | 2 | ... | ... | ... | 4 | ... | 15 | .. | 15 | 1 | 117 | South-Eastern. |
| ... | 4 | ... | 2 | ... | ... | ... | ... | ... | ... | ... | 10 | ... | 2 | ... | 43 | Taff Vale. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | Tottenham and Forest Gate Joint. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 2 | Tottenham and Hampstead Joint. |
| ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | West London Extension Joint. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | Wigan. |
| 30 | 371 | ... | 589 | ... | 169 | 1 | 11 | 2 | 642 | 5 | 1,111 | 3 | 810 | 51 | 9,888 | TOTAL, ENGLAND AND WALES. |
| | | | | | | | | | | | | | | | | SCOTLAND. |
| ... | 7 | ... | 10 | ... | 3 | ... | ... | ... | 5 | 1 | 11 | 1 | 9 | 3 | 190 | Caledonian. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | Dumbarton and Balloch Joint. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | Dundee and Arbroath Joint. |
| ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 12 | Glasgow and Paisley Joint. |
| ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 9 | Glasgow and South-Western. |
| ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 5 | Glasgow, Barrhead, and Kilmarnock Joint. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | Great North of Scotland. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | Highland. |
| ... | 2 | ... | 3 | ... | ... | ... | ... | ... | 4 | ... | 6 | ... | 3 | ... | 105 | North British. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | Portpatrick and Wigtownshire Joint. |
| ... | 10 | ... | 16 | ... | 3 | ... | ... | ... | 9 | 1 | 19 | 1 | 14 | 4 | 326 | TOTAL, SCOTLAND. |
| | | | | | | | | | | | | | | | | IRELAND. |
| ... | ... | ... | 1 | | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 5 | Belfast and County Down. |
| ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 6 | Belfast and Northern Counties. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | Cavan and Leitrim. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 3 | Cork, Bandon, and South Coast. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | Dublin, Wicklow, and Wexford. |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | Dundalk, Newry, and Greenore. |
| ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | 4 | Great Northern. |
| ... | ... | ... | 1 | ... | ... | ... | ... | ... | 3 | ... | ... | ... | 5 | ... | 31 | Great Southern an Western. |
| ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 6 | Midland Great Western. |
| ... | ... | ... | ... | ... | ... | ... | ... | .. | ... | ... | ... | ... | ... | ... | 1 | Waterford, Limerick and Western. |
| ... | 4 | ... | 2 | ... | ... | ... | ... | ... | 3 | 1 | 1 | ... | 7 | 1 | 59 | TOTAL, IRELAND. |
| 30 | 385 | ... | 607 | ... | 172 | 1 | 11 | 2 | 654 | 7 | 1,131 | 4 | 831 | 56 | 10,273 | TOTAL, UNITED KINGDOM. |

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purpose of working the railway, but does not include factories, workshops, buildings used exclusively for warehousing goods, repairing other similar premises.

# NATURE OF ORDINARY EMPLOYMENT OF SERVANTS OF THE COMPANIES AND OF CONTRACTORS KILLED OR INJURED OTHERWISE THAN IN ACCIDENTS TO TRAINS OR BY THE MOVEMENT OF RAILWAY VEHICLES.

## TABLE No. 10.

STATEMENT showing the number of SERVANTS of the COMPANIES and of CONTRACTORS reported to the BOARD OF TRADE as having KILLED or INJURED otherwise than in ACCIDENTS to TRAINS or by the MOVEMENT of RAILWAY VEHICLES during the ending 31st December 1897, classified according to the NATURE of the EMPLOYMENT and AGE of the persons injured and the NATUR the INJURIES; and also the total number of PERSONS employed in each class of service.

| NATURE OF EMPLOYMENT. | NATURE OF INJURIES. | | | | | | | | | | | | | | | | | Total Injured. | Nc Per emp |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fatal. 1. | Injuries resulting in loss of | | | Fracture of | | | | Dislocations. 9. | Internal Injuries. 10. | Contusions of | | Scalds or Burns. 13. | Sprains. 14. | Cuts or Lacerations. 15. | Shock to System. 16. | Miscellaneous Injuries. 17. | | |
| | | Legs or Feet. 2. | Arms or Hands. 3. | Fingers or Toes. 4. | Skulls. 5. | Legs or Arms. 6. | Collar-bones or ribs. 7. | Other Bones. 8. | | | Head or Body. 11. | Limbs. 12. | | | | | | | |
| 1. Brakesmen. (*See Goods Guards.*) | | | | | | | | | | | | | | | | | | | |
| 2. Capstanmen ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 9 | ... | 2 | 1 | ... | 14 | 27 | |
| 3. Capstan-lads ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | 1 | 2 | |
| 4. Carmen ... ... | 1 | ... | 1 | ... | ... | 5 | 5 | 4 | 4 | 3 | 25 | 106 | ... | 56 | 31 | 2 | 142 | 384 | 12 |
| 5. Carriage-cleaners: | | | | | | | | | | | | | | | | | | | |
| (1) Men ... | ... | ... | ... | ... | ... | 1 | 3 | 1 | 3 | 1 | 9 | 11 | 2 | 30 | 8 | 1 | 86 | 106 | 3 |
| (2) Boys ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 2 | ... | 5 | 8 | |
| 6. Carriage and waggon examiners. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 5 | 1 | 11 | ... | ... | 18 | 35 | 2. |
| 7. Checkers ... ... | ... | ... | ... | ... | ... | 3 | 4 | 1 | 1 | 3 | 11 | 46 | ... | 40 | 8 | ... | 102 | 219 | 6. |
| 8. Chockers, Chain-boys, and Slippers: | | | | | | | | | | | | | | | | | | | |
| (1) Men ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | 1 | ... | 4 | ... | 1 | 2 | ... | 2 | 11 | |
| (2) Boys ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | 1 | 2 | 1 | 3 | 2 | ... | 9 | 19 | |
| 9. Clerks: | | | | | | | | | | | | | | | | | | | |
| (1) Men ... | 2 | ... | ... | ... | 1 | 3 | 1 | 1 | 1 | 1 | ... | 1 | 1 | 6 | 4 | ... | 13 | 33 | 38, |
| (2) Boys ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | 4 | 2 | ... | ... | 8 | 7, |
| 10. Engine-cleaners: | | | | | | | | | | | | | | | | | | | |
| (1) Men ... | ... | ... | ... | ... | ... | 5 | 2 | 5 | 3 | 8 | 19 | 49 | 28 | 63 | 51 | 3 | 203 | 439 | 14, |
| (2) Boys ... | ... | ... | ... | ... | ... | 1 | ... | 3 | 1 | 1 | 5 | 9 | 4 | 4 | 9 | ... | 24 | 61 | 3, |
| 11. Engine-drivers ... | ... | ... | 1 | 2 | ... | 2 | 7 | 4 | 3 | 4 | 24 | 43 | 17 | 66 | 28 | 1 | 177 | 379 | 19, |
| 12. Firemen ... ... | ... | ... | ... | 1 | ... | 5 | 2 | 1 | 4 | 7 | 32 | 117 | 24 | 95 | 67 | 2 | 275 | 632 | 19. |
| 13. Gatekeepers ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | 1 | 1 | 1 | ... | 2 | ... | ... | 3 | 10 | 3, |
| 14. Greasers: | | | | | | | | | | | | | | | | | | | |
| (1) Men ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | 1 | 6 | 3 | ... | 6 | 18 | 1, |
| (2) Boys ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | 1 | 2 | 1 | 1 | ... | ... | ... | 6 | |
| 15. Guards (Goods and Brakesmen). | 1 | ... | ... | ... | ... | 8 | 5 | 2 | 1 | 2 | 6 | 44 | 3 | 67 | 12 | 1 | 65 | 216 | 11, |
| 16. Guards, Passenger | ... | ... | ... | ... | ... | 1 | ... | 1 | 1 | ... | 5 | 10 | ... | 10 | 2 | 1 | 17 | 48 | 6, |
| 17. Horse-drivers ... | ... | ... | ... | 1 | ... | ... | ... | 1 | ... | 1 | 5 | 17 | ... | 10 | 6 | 1 | 23 | 65 | 2. |
| 18. Inspectors, Permanent way. | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | 1 | ... | ... | 1 | 4 | |
| 19. Inspectors, Others | 1 | ... | ... | 1 | .. | ... | 1 | 1 | ... | ... | 2 | 6 | ... | 8 | 4 | ... | 13 | 36 | 5, |
| 20. Labourers ... | 21 | ... | ... | 8 | 2 | 23 | 11 | 19 | 12 | 23 | 45 | 439 | 16 | 198 | 131 | 9 | 588 | 1,524 | 45, |
| 21. Lampmen ... | ... | ... | ... | ... | ... | 4 | ... | 1 | 3 | 1 | 2 | 9 | 3 | 13 | 4 | 1 | 23 | 64 | 1, |
| 22. Lamp-lads ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | 2 | 1 | 1 | 3 | 1 | 1 | 8 | 19 | |
| 23. Loaders and Sheeters. | ... | ... | ... | 2 | ... | 6 | 1 | 2 | 3 | 3 | 20 | 103 | ... | 47 | 15 | ... | 189 | 391 | 2, |
| 24. Mechanics ... | 2 | ... | ... | 1 | ... | 7 | 2 | 8 | 1 | 5 | 17 | 54 | 17 | 37 | 44 | 4 | 163 | 360 | 69, |
| 25. Messengers: | | | | | | | | | | | | | | | | | | | |
| (1) Men ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | 1 | 1 | 3 | ... | ... | 4 | 11 | 1, |
| (2) Boys ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | 1 | 4 | ... | 2 | 2 | ... | 4 | 15 | 1, |
| 26. Number-takers ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | 5 | ... | 9 | ... | ... | 11 | 27 | 1. |
| 27. Permanent-way men. | 6 | ... | ... | 10 | ... | 19 | 10 | 8 | 11 | 12 | 18 | 182 | 10 | 102 | 47 | 3 | 396 | 828 | 58, |
| 28. Pointsmen ... | 1 | ... | ... | ... | ... | 1 | ... | ... | ... | ... | 1 | 1 | ... | 10 | 2 | ... | 3 | 18 | |
| 29. Policemen ... | ... | ... | ... | ... | ... | ... | 1 | 1 | 1 | ... | 3 | 2 | ... | 5 | 3 | 1 | 3 | 20 | 1, |
| 30. Porters: | | | | | | | | | | | | | | | | | | | |
| (1) Men ... | 2 | ... | ... | 6 | 1 | 53 | 30 | 39 | 37 | 54 | 132 | 710 | 17 | 511 | 197 | 14 | 1,217 | 3,018 | 42, |
| (2) Boys ... | ... | ... | ... | ... | ... | 2 | 1 | 3 | ... | 2 | 2 | 7 | 3 | 7 | 2 | ... | 15 | 44 | 2. |
| 31. Shunters ... ... | ... | ... | ... | ... | ... | 2 | 1 | 1 | 1 | 1 | 5 | 30 | 2 | 34 | 13 | 1 | 55 | 146 | 7, |
| 32. Signal fitters ... | 1 | ... | ... | 1 | 1 | ... | 2 | 2 | ... | 1 | ... | 6 | ... | 8 | 4 | 2 | 9 | 36 | 1, |
| 33. Signalmen ... | 1 | ... | ... | 1 | ... | 4 | ... | ... | 3 | 5 | 4 | 7 | 2 | 35 | 8 | 1 | 44 | 114 | 23, |
| 34. Signal-box lads ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | 1 | ... | 1 | ... | ... | 4 | 1. |
| 35. Station-masters ... | ... | ... | ... | ... | ... | 2 | .. | ... | ... | 1 | 2 | 7 | ... | 6 | 1 | ... | 8 | 27 | 7, |
| 36. Ticket-collectors | ... | ... | ... | ... | ... | 2 | ... | ... | 1 | 1 | 2 | 4 | 1 | 9 | 1 | ... | 10 | 31 | 2, |
| 37. Van-lads ... ... | ... | ... | ... | ... | 1 | 4 | ... | 2 | 4 | ... | 6 | 32 | ... | 9 | 12 | ... | 44 | 114 | 5. |
| 38. Watchmen ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | 2 | 1 | ... | 5 | 10 | |
| 39. Yardsmen ... | ... | ... | ... | 2 | ... | 1 | ... | 1 | 1 | ... | 1 | 3 | ... | 3 | 1 | ... | 8 | 21 | 1, |
| 40. Miscellaneous: | | | | | | | | | | | | | | | | | | | |
| (1) Men ... | 4 | ... | ... | 3 | 1 | 6 | 9 | 14 | 6 | 8 | 23 | 103 | 14 | 81 | 33 | 3 | 216 | 520 | 18, |
| (2) Boys ... | 3 | ... | ... | 1 | 1 | 2 | ... | 1 | 1 | ... | 3 | 10 | 3 | 3 | 6 | ... | 21 | 52 | 2, |
| **Total of Railway Servants** | 47 | ... | 2 | 40 | 8 | 173 | 99 | 137 | 111 | 153 | 437 | 2,206 | 174 | 1,624 | 771 | 52 | 4,193 | 10,180 | 465 |
| 41. Contractors' Servants: | | | | | | | | | | | | | | | | | | | |
| (1) Men ... | 9 | ... | ... | ... | 1 | 5 | 6 | 2 | 1 | ... | 8 | 14 | 2 | 3 | 7 | 2 | 41 | 92 | |
| (2) Boys ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | |
| **Total of Contractors' Servants** | 9 | ... | ... | ... | 1 | 5 | 6 | 2 | 1 | ... | 8 | 15 | 2 | 3 | 7 | 2 | 41 | 93 | |
| **Total of Railway and Contractors' Servants** | 56 | ... | 2 | 40 | 9 | 178 | 105 | 139 | 112 | 153 | 445 | 2,221 | 176 | 1,627 | 778 | 54 | 4,234 | 10,273 | |

## ACCIDENTS TO TRAINS, ROLLING STOCK AND PERMANENT WAY.

### TABLE No. 11.

SUMMARY STATEMENT of the NUMBER of ACCIDENTS to TRAINS, ROLLING STOCK, PERMANENT WAY, &c., reported to the BOARD OF TRADE as having occurred on the RAILWAYS in each DIVISION of the UNITED KINGDOM during the Year ending 31st December 1897, classified according to the NATURE of the ACCIDENT; with figures for the UNITED KINGDOM for the Year 1896.

| NATURE OF ACCIDENT. | 1897. | | | | 1896. |
|---|---|---|---|---|---|
| | ENGLAND AND WALES. | SCOTLAND. | IRELAND. | UNITED KINGDOM. | UNITED KINGDOM. |
| (A)—ACCIDENTS TO TRAINS:— | | | | | |
| 1. Collisions between passenger trains or parts of passenger trains. | 25 | 4 | 2 | 31 | 25 |
| 2. Collisions between passenger trains and goods or mineral trains or light-engines. | 31 | 7 | 1 | 39 | 42 |
| 3. Collisions between goods trains or parts of goods trains and light-engines. | 30 | 4 | ... | 34 | 38 |
| 4. Collisions between trains and vehicles standing foul of the line. | 1 | ... | ... | 1 | 2 |
| 5. Collisions between trains and buffer-stops or vehicles standing against buffer-stops:— | | | | | |
| (a) From trains running into stations or sidings at too high a speed. | 8 | 4 | ... | 12 | 16 |
| (b) From other causes ... ... ... ... | 9 | 2 | ... | 11 | 12 |
| 6. Trains coming in contact with projections from other trains running on parallel lines. | ... | ... | ... | ... | 1 |
| 7. Passenger trains or parts of passenger trains leaving the rails. | 27 | 5 | 8 | 40 | 59 |
| 8. Goods trains or parts of goods trains, light-engines, &c., leaving the rails. | 14 | 4 | 2 | 20 | 19 |
| 9. Trains running through gates at level-crossings or into other obstacles. | 181 | 51 | 23 | 255 | 208 |
| 10. Fires in trains ... ... ... ... ... ... ... | 3 | 8 | ... | 11 | 14 |
| 11. Miscellaneous ... ... ... ... ... ... ... | 4 | ... | 1 | 5 | 2 |
| (B)—ACCIDENTS TO OR FAILURE OF ROLLING STOCK AND PERMANENT WAY:— | | | | | |
| 12. The bursting of boilers or tubes, &c., of engines... | 7 | ... | ... | 7 | 1 |
| 13. The failure of machinery, springs, &c., of engines | 6 | 2 | 1 | 9 | 6 |
| 14. The failure of tyres ... ... ... ... ... ... | 341 | 17 | ... | 358 | 433 |
| 15. " " " wheels... ... ... ... ... ... | ... | ... | ... | ... | 3 |
| 16. " " " axles ... ... ... ... ... ... | 122 | 60 | 8 | 190 | 183 |
| 17. " " " brake apparatus* ... ... ... | ... | ... | ... | ... | ... |
| 18. " " " couplings ... ... ... ... ... | 12 | 3 | 3 | 18 | 10 |
| 19. " " " ropes used in working inclines ... | ... | ... | ... | ... | 2 |
| 20. " " " tunnels, bridges, viaducts, culverts, &c. | 1 | ... | ... | 1 | ... |
| 21. Broken rails ... ... ... ... ... ... ... | 215 | 28 | 19 | 262 | 302 |
| 22. The flooding of portions of permanent-way of such a nature as to involve danger. | 37 | 9 | ... | 46 | 28 |
| 23. Slips in cuttings or embankments of such a nature as to involve danger. | 25 | ... | ... | 25 | 11 |
| 24. Fires at stations or involving injury to bridges or viaducts. | 6 | 2 | 2 | 10 | 2 |
| 25. Miscellaneous ... ... ... ... ... ... ... | 2 | ... | ... | 2 | 1 |

* A Return is published half-yearly setting out in detail all the cases in which brake apparatus has failed to act properly.

## TABLE No. 12.

NUMBER of ACCIDENTS of EACH CLASS, to TRAINS, ROLLING STOCK, PERMANENT WAY, &c., reported to Year ending

| NAME OF COMPANY. | A. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1. Collisions between Passenger Trains or Parts of Passenger Trains. | 2. Collisions between Passenger Trains and Goods or Mineral Trains or Light Engines. | 3. Collisions between Goods Trains or Parts of Goods Trains and Light Engines. | 4. Collisions between Trains and Vehicles standing foul of the Line. | 5. Collisions between Trains and Buffer Stops or Vehicles standing against Buffer Stops. (a.) From Trains running into Stations or Sidings at too high a speed. | 5. (b.) From other Causes. | 6. Trains coming in Contact with Projections from other Trains running on Parallel Lines. | 7. Passenger Trains or Parts of Passenger Trains leaving the Rails. | 8. Goods Trains or Parts of Goods Trains, Light Engines, &c., leaving the Rails. | 9. Trains running through Gates at Level Crossings or into other obstacles. | 10. Fires in Trains. | 11. Miscellaneous. |
| **ENGLAND AND WALES.** | | | | | | | | | | | | |
| Brecon and Merthyr Tydfil Junction. | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... |
| Cambrian .. ... ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... |
| Cardiff (late Bute Docks)... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... |
| Cheshire Lines ... ... | 2 | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
| Cleator and Workington Junction. | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... |
| Festiniog ... ... ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... |
| Furness ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... |
| Golden Valley ... ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
| Great Central ... ... | 1 | 1 | 1 | ... | ... | ... | ... | ... | ... | 7 | ... | ... |
| Great Eastern ... ... | 4 | 1 | ... | ... | 1 | 1 | ... | 1 | ... | 37 | ... | ... |
| Great Northern ... ... | ... | 3 | 1 | ... | 2 | 1 | ... | ... | ... | 3 | 1 | ... |
| Great Northern and Great Eastern Joint. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Great Northern and London and North-Western Joint | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Great Western ... ... | 2 | 2 | 3 | 1 | 2 | 2 | ... | 2 | 1 | 38 | 1 | ... |
| Hull, Barnsley, and West Riding Junction. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Isle of Wight ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Isle of Wight Central ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... |
| Lancashire and Yorkshire | 3 | 5 | 12 | ... | 1 | 2 | ... | 5 | 1 | 17 | 1 | ... |
| Lancashire and Yorkshire and London and North-Western Joint. | ... | 1 | ... | ... | ... | 1 | ... | ... | ... | 3 | ... | ... |
| Lancashire, Derbyshire, and East Coast. | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
| Liverpool Overhead ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| London and North-Western | 4 | 2 | 1 | ... | ... | ... | ... | 2 | 1 | 2 | ... | ... |
| London and North-Western and Great Western Joint. | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... |
| London and South-Western | 3 | 4 | 2 | ... | 1 | 2 | ... | ... | 4 | 10 | ... | 1 |
| London and South-Western and London, Brighton, and South Coast Joint. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| London, Brighton, and South Coast. | 2 | 3 | 1 | ... | ... | ... | ... | 2 | 1 | 4 | ... | ... |
| London, Chatham, and Dover. | 1 | ... | ... | ... | ... | ... | ... | 1 | 2 | 1 | ... | 2 |
| London, Tilbury, and Southend. | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... |
| Manchester and Milford ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Manchester, Sheffield, and Lincolnshire. (*See* Great Central.) | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Mersey ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Metropolitan ... ... | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Metropolitan District ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Midland ... ... ... | 1 | 1 | 1 | ... | ... | ... | .. | 1 | ... | 3 | ... | ... |
| Midland and Great Northern Joint. | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 2 | ... | ... |
| Midland and South-Western Junction. | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... |
| Neath and Brecon ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | ... |
| North-Eastern ... ... | 2 | 1 | 5 | ... | ... | ... | ... | 1 | 1 | 39 | ... | ... |
| North-Eastern and London and North-Western Joint. | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| North Staffordshire ... | ... | .. | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... |
| Oldham, Ashton-under-Lyne, and Guide Bridge Junction. | ... | ... | .. | ... | ... | ... | ... | ... | ... | 1 | ... | ... |
| Pontypridd, Caerphilly, and Newport. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Rhymney ... .. ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | ... |
| Rhymney and Great Western Joint. | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... |
| Severn and Wye and Severn Bridge Joint. | ... | ... | ... | .. | ... | ... | ... | ... | ... | 1 | ... | ... |

**NOTE.**—In this Table accidents under A are entered against the Company on whose line they occur, but those

CK, AND PERMANENT WAY.

## TABLE No. 12.

BOARD of TRADE as having occurred on the several RAILWAYS in the UNITED KINGDOM, during the December 1897.

B.

| e<br>ting<br>f<br>ers<br>bes,<br>of<br>nes. | 13.<br>The failure of Machinery, Springs, &c., of Engines. | 14.<br>The Failure of Tyres. | 15.<br>The Failure of Wheels. | 16.<br>The Failure of Axles. | 17.<br>The Failure of Brake Apparatus. | 18.<br>The Failure of Couplings. | 19.<br>The Failure of Ropes used in working Inclines. | 20.<br>The Failure of Tunnels, Bridges, Viaducts, Culverts, &c. | 21.<br>Broken Rails. | 22.<br>The Flooding of Portions of the Permanent Way, involving Danger. | 23.<br>Slips in Cuttings or Embankments of such a Nature as to involve Danger. | 24.<br>Fires at Stations or involving Injury to Bridges or Viaducts. | 25.<br>Miscellaneous. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
|  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | ... | ... |
|  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
|  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
|  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
|  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
|  | ... | ... | ... | ... | ... | ... | ... | ... | 12 | ... | ... | ... | ... |
|  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 1 | 1 | 1 | ... | 4 | ... | ... | ... | ... | 17 | ... | 1 | ... | ... |
|  | ... | 4 | ... | 2 | ... | ... | ... | ... | 6 | 26 | 5 | 3 | ... |
|  | 1 | 1 | ... | ... | ... | ... | ... | ... | 6 | ... | ... | ... | ... |
|  | ... | 1 | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
|  | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
|  | 2 | 11 | ... | 17 | ... | 1 | ... | ... | 24 | 2 | 9 | ... | ... |
|  | ... | ... | ... | 1 | ... | ... | ... | ... | 3 | ... | ... | ... | ... |
|  | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
|  | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... |
|  | ... | 4 | ... | 2 | ... | 6 | ... | ... | 5 | 1 | ... | ... | ... |
| 1 | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
|  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
|  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 3 | ... | 52 | ... | 27 | ... | 1 | ... | ... | 12 | 6 | 3 | ... | ... |
|  | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
|  | ... | 2 | ... | 9 | ... | ... | ... | ... | 19 | ... | 7 | ... | 2 |
|  | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
|  | ... | ... | ... | 4 | ... | 1 | ... | 1 | 22 | ... | ... | 2 | ... |
|  | ... | ... | ... | ... | ... | ... | ... | ... | 10 | ... | ... | ... | ... |
|  | ... | ... | ... | 2 | ... | ... | ... | ... | 2 | ... | ... | ... | ... |
|  | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... |
|  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
|  | ... | ... | ... | ... | ... | ... | ... | ... | 3 | ... | ... | ... | ... |
|  | ... | 1 | ... | 1 | ... | ... | ... | ... | 7 | ... | ... | ... | ... |
|  | ... | ... | ... | ... | ... | ... | ... | ... | 3 | ... | ... | ... | ... |
|  | ... | 9 | ... | 2 | ... | ... | ... | ... | 7 | ... | ... | ... | ... |
|  | ... | ... | ... | .. | ... | ... | ... | ... | ... | ... | ... | ... | ... |
|  | ... | ... | ... | ... | ... | 1 | ... | ... | 1 | ... | ... | ... | ... |
|  | ... | ... | ... | ... | ... | ... | ... | ... | 3 | ... | ... | ... | ... |
| 2 | 2 | 9 | ... | 12 | ... | 1 | ... | ... | 43 | 2 | ... | ... | ... |
|  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
|  | ... | 2 | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | .. |
|  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
|  | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... |
|  | ... | 1 | ... | 11 | ... | ... | ... | ... | ... | ... | ... | ... | ... |
|  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | .. |
|  | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |

r B are entered against the Company to which the rolling-stock or permanent way belongs.

## TABLE No. 12—*continued.*

NUMBER of ACCIDENTS of EACH CLASS, to TRAINS, ROLLING STOCK, PERMANENT WAY, &c., reported to Year ending

| NAME OF COMPANY. | A. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1. Collisions between Passenger Trains or Parts of Passenger Trains. | 2. Collisions between Passenger Trains and Goods or Mineral Trains or Light Engines. | 3. Collisions between Goods Trains or Parts of Goods Trains and Light Engines. | 4. Collisions between Trains and Vehicles standing foul of the Line. | 5. Collisions between Trains and Buffer Stops or Vehicles standing against Buffer Stops. | | 6. Trains coming in Contact with Projections from other Trains running on Parallel Lines. | 7. Passenger Trains or Parts of Passenger Trains leaving the Rails. | 8. Goods Trains or Parts of Goods Trains, Light Engines, &c., leaving the Rails. | 9. Trains running through Gates at Level Crossings or into other obstacles. | 10. Fires in Trains. | 11. Miscellaneous. |
| | | | | | (a.) From Trains running into Stations or Sidings at too high a speed. | (b.) From other Causes. | | | | | | |
| **ENGLAND AND WALES** —*cont.* | | | | | | | | | | | | |
| Somerset and Dorset Joint | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| South-Eastern ... ... | 2 | 2 | 1 | ... | ... | ... | ... | 2 | ... | ... | ... | ... |
| Taff Vale ... ... ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | ... |
| West London Extension Joint. | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... |
| Wirral ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| Wrexham, Mold, and Connah's Quay. | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
| Private Owners ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| TOTAL, ENGLAND AND WALES. | 25 | 31 | 30 | 1 | 8 | 9 | ... | 27 | 14 | 181 | 3 | 4 |
| **SCOTLAND.** | | | | | | | | | | | | |
| Caledonian ... ... ... | 2 | 1 | 2 | ... | ... | ... | ... | 2 | 1 | 27 | 8 | ... |
| Dumbarton and Balloch Joint. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Glasgow and Paisley Joint | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | ... | ... |
| Glasgow and South-Western. | ... | 1 | 1 | ... | 2 | ... | ... | ... | 2 | 2 | ... | ... |
| Glasgow, Barrhead, and Kilmarnock Joint. | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... |
| Great North of Scotland ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... |
| Highland ... ... ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... |
| North British ... ... | 2 | 3 | 1 | ... | 1 | ... | ... | 3 | 1 | 20 | ... | ... |
| Portpatrick and Wigtownshire Joint. | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Private Owners ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| TOTAL, SCOTLAND ... | 4 | 7 | 4 | ... | 4 | 2 | ... | 5 | 4 | 51 | 8 | ... |
| **IRELAND.** | | | | | | | | | | | | |
| Belfast and County Down | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Belfast and Northern Counties. | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
| Bessbrook and Newry ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
| Cavan and Leitrim ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 6 | ... | ... |
| Cork, Bandon, and South Coast. | ... | ... | .. | ... | ... | ... | ... | ... | ... | 1 | ... | ... |
| Dublin, Wicklow, and Wexford. | .. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Great Northern ... ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... |
| Great Southern and Western. | ... | ... | ... | ... | ... | ... | ... | 3 | ... | 1 | ... | ... |
| Midland Great Western ... | 1 | 1 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
| Waterford and Central Ireland. | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... |
| Waterford, Limerick, and Western. | ... | ... | ... | ... | ... | ... | ... | 1 | 1 | 13 | ... | ... |
| West Clare ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| TOTAL, IRELAND ... | 2 | 1 | ... | ... | ... | ... | ... | 8 | 2 | 23 | ... | 1 |
| TOTAL, UNITED KINGDOM | **31** | **39** | **34** | **1** | **12** | **11** | ... | **40** | **20** | **255** | **11** | **5** |

**Note.—In this Table accidents under A are entered against the Company on whose line they occur, but those**

STOCK, AND PERMANENT WAY.

## TABLE No. 12—*continued.*

the BOARD of TRADE as having occurred on the several RAILWAYS in the UNITED KINGDOM, during the 31st December 1897.

| B. | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12. The bursting of Boilers or Tubes, &c., of Engines. | 13. The failure of Machinery, Springs, &c., of Engines. | 14. The Failure of Tyres. | 15. The Failure of Wheels. | 16. The Failure of Axles. | 17. The Failure of Brake Apparatus. | 18. The Failure of Couplings. | 19. The Failure of Ropes used in working Inclines. | 20. The Failure of Tunnels, Bridges, Viaducts, Culverts, &c. | 21. Broken Rails. | 22. The Flooding of Portions of the Permanent Way, involving Danger. | 23. Slips in Cuttings or Embankments of such a Nature as to involve Danger. | 24. Fires at Stations or involving Injury to Bridges or Viaducts. | 25. Miscellaneous. |
| ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| ... | ... | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | ... |
| ... | ... | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| ... | ... | 238 | ... | 25 | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 7 | 6 | 341 | ... | 122 | ... | 12 | ... | 1 | 215 | 37 | 25 | 6 | 2 |
| ... | ... | 9 | ... | 14 | ... | 2 | ... | ... | 13 | 1 | ... | 2 | ... |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | .. | ... | ... | ... | ... |
| ... | 1 | 2 | ... | 2 | ... | ... | ... | ... | 2 | 8 | ... | ... | ... |
| ... | 1 | ... | ... | ... | ... | ... | ... | ... | 2 | ... | ... | ... | .. |
| ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| ... | ... | 1 | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... |
| ... | ... | 3 | ... | 36 | ... | ... | ... | ... | 10 | ... | ... | ... | ... |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| ... | ... | 1 | ... | 7 | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| ... | 2 | 17 | ... | 60 | ... | 3 | ... | ... | 28 | 9 | ... | 2 | ... |
| ... | ... | ... | ... | 1 | ... | ... | ... | ... | 3 | ... | ... | ... | ... |
| ... | 1 | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| ... | ... | ... | ... | ... | ... | 1 | ... | ... | 1 | ... | ... | ... | ... |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| .. | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 | ... |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | 5 | ... | ... | ... | ... |
| ... | ... | ... | ... | 1 | ... | ... | ... | ... | 8 | ... | ... | 1 | ... |
| ... | ... | ... | ... | 3 | ... | 1 | ... | ... | 2 | ... | ... | ... | .. |
| ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| ... | 1 | ... | ... | 8 | ... | 3 | ... | ... | 19 | ... | ... | 2 | ... |
| **7** | **9** | **358** | ... | **190** | ... | **18** | ... | **1** | **262** | **46** | **25** | **10** | **2** |

under B are entered against the Company to which the rolling-stock or permanent-way belongs.

Board of Trade,
19th April 1898.

COURTENAY BOYLE.

# REPORTS TO THE BOARD OF TRADE BY INSPECTING OFFICERS OF THE RAILWAY DEPARTMENT UPON CERTAIN ACCIDENTS WHICH HAVE BEEN INQUIRED INTO.

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|---|---|
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| North British: | |
| Lieutenant-Colonel Yorke's report on the collision that occurred on the 20th November between a goods train and a train of empty waggons at Falkirk. | 134 |
| Lieutenant-Colonel Yorke's report on the collision that occurred on the 11th December between a passenger train and a light engine at Whitburn. | 139 |
| North-Eastern: | |
| Lieutenant-Colonel Addison's report on the double collision that occurred on the 10th July between a passenger train and a light engine, and the light engine and another passenger train at the Central station. Newcastle-on-Tyne. | 142 |
| Lieutenant-Colonel Yorke's report on the double collision that occurred on the 31st July between a passenger train and an empty train, and the empty train and some empty coaches at the Central station, Newcastle-on-Tyne. | 146 |
| Lieutenant-Colonel Addison's report on the collision that occurred on the 27th December between two goods trains at Ryhope. | 151 |
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| Lieutenant-Colonel Yorke's report on the accident that occurred on the 15th July to a passenger train, a portion of which left the rails at Newcastle-under-Lyme. | 156 |
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| Sir Francis Marindin's report on the collision that occurred on the 20th July between two passenger trains at Borough Market Junction, London Bridge. | 159 |

For other Reports of Inquiries into Accidents which have occurred during the twelve months, *see* [C.—8527] and [C.—8631].

## FESTINIOG RAILWAY.

Board of Trade (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.,
August 18th 1897.

SIR,

I HAVE the honour to report for the information of the Board of Trade, in compliance with the order of the 30th July, the result of my enquiry into the collision that occurred on the 23rd idem near Blaenau Festiniog, on the Festiniog Railway.

In this case while the 10.5 a.m. down passenger train was standing at the down home signal of Dinas Junction signal cabin, it was run into by an up mineral train, which should have gone into the siding alongside of the passenger line, but which, owing to the points not being set for the siding, proceeded along the main line until it struck the engine of the first train.

No one was injured, and the damage to rolling-stock consisted merely of the breaking of the central buffers of the two engines and the bending of the buffer plates.

The passenger train consisted of a double bogie (Fairlie) engine and seven carriages, three of which were bogie vehicles, and the rest four-wheelers, and it was fitted with the automatic vacuum brake. The mineral train consisted of a four-wheeled tank engine, running chimney in front, and 22 wagons.

### *Description.*

The Festiniog (narrow gauge) railway is single, and is worked on the train staff and ticket system, combined with the absolute block.

Dinas Junction signal cabin, where the collision occurred, is a block box and staff station. The arrangements at this place do not provide for the crossing of passenger trains, but there is a mineral loop parallel to and west of the main line, and connecting with the latter opposite to the signal cabin, the points being facing to up trains, *i.e.* those travelling from Portmadoc to Duffws, the terminal station at Festiniog.

There are three junctions controlled from this signal box, viz. (1) a single junction situated 200 yards north of the box, between the main line and a mineral line to Dinas; (2) the junction already referred to between the main line and the mineral line to Duffws; (3) a single junction between the mineral line to Duffws and a mineral line to Dinas, the points in this case being facing to trains going towards Dinas. There is a curve of seven chains radius between junctions Nos. 1 and 2, and a gradient rising towards the signal box of 1 in 88.

The up signals are (1) the distant, situated 236 yards outside, or west of No. 1 junction; (2) the outer home signal, alongside the points of No. 1 junction; (3) the inner home, situated close to the box alongside of No. 2 junction points; and (4) on the same post as 3, a siding signal for the mineral line to Duffws. The only down signal with which this report is concerned is the down home signal, which is placed alongside the main line, south of the signal box, so as to cover the crossing of the mineral line from Duffws to Dinas over the main line. The post supporting this signal also carries the down signals relating to the mineral lines.

The points on the main line are provided with facing point locks and locking bars, and the levers working the points and signals are interlocked.

I attach a diagram which renders any further description of the signalling arrangements unnecessary.

### *Evidence.*

*Owen Morris*, signalman, states: I have been in the Company's service 36 years, and signalman 21 years. I have been in Dinas loop box (No. 3 box) 17 years. On the morning of the 23rd July I came on duty at 6.15 a.m. to work till 7.50 or 8 p.m. At about 10 a.m. on the morning of the 23rd I accepted the down passenger train from Duffws signal box, and it arrived at my down home signal at 10.13. The signal was at danger, and the train came to a stand at it. It had to wait there to let the up special pass it. The special was bringing the staff with it, the previous passenger train from Tanygrisiau having come with the ticket. The special arrived at 10.23 (I had previously given line clear for it), and I put the points and signals for the passenger line. I did this in a moment of forgetfulness, as I knew the special was a goods train and had to go into the siding. When the goods train had passed the outer home signal, and was about

60 yards from the signal box, I threw the inner home signal to danger against the special train. I did this because the train was coming too fast, and I wanted the driver to come more slowly to give up the staff and take a ticket for the next section towards Duffws. I did not remember that I had the road set for the main line until the train was passing my box. I did not expect the driver to stop at my signal box when I put the signal to danger, I only meant to check him. I have been in the habit of putting the signal to danger against drivers, when I have thought they are coming too fast, as a caution. I do not do this to passenger trains, but I do to goods trains. I have never had any accident happen of this nature before at my box. I had the ticket ready for the special when it arrived, but I had not got the staff for the section to Duffws, as this was still in the engine of the down passenger train. I had taken the ticket out before when the staff was in the box ready for the 9.32 up train to pass. The driver of the special train did not take the ticket from me as he passed my box, he was going too fast. I think he was going at about 15 miles an hour when I put the signal to danger. I have sometimes thrown the signals to danger in front of special goods trains when the gates of the level crossing, north of the cabin, are across the railway.

*John Lloyd Paul*, driver, states: I have been in the Company's service about six years, and I have been driver about 1 year. On the 23rd July I came on duty at 5 a.m. to work till 4.30 p.m. I was driver of a special goods train from Portmadoc to Festiniog. We left Portmadoc at 9.15 a.m., and we arrived at Tanygrisiau soon after 10.30 a.m. I had to make a shunt there; this occupied two or three minutes, and as soon as I received the train staff I came on to Dinas Junction. On approaching Dinas Junction the signals were all off for my train, viz., the distant, the outer home signal, and the signal for the siding, that is, the lower arm on the post. While I was getting the staff out to hand to the signalman, I saw him, through the window, doing something to the levers in the box, and I then looked at the home signal again and I saw that the signal had been put against me. I threw the staff down and at once I shut off steam, reversed my engine, and gave her steam again, and did all I could to stop. I saw the passenger train on the main line as I was coming round the curve, but I thought the points were right for me to go into the siding as the signal was off for the siding. I am certain that the up main line signal was not off for me, but that it was the siding signal. If the main line signal had been off I should have known that something was wrong, and I should have stopped on the curve and ascertained what it meant before I proceeded. I was travelling round the curve at from six to seven miles an hour. I have not known the signalman to put the signals to danger against a driver in order to caution him that he was running too fast. I was only a few yards away from the signal box when the signal was put to danger against me. I was not able to take a ticket from the signalman as I passed the box because he was not in the window to give it to me. It is the custom for the signalman to show the drivers the train staff when he gives them a ticket. My engine was a four-wheeled tank engine, and I was running chimney in front. The driver's side of a single engine is on the left hand side. I have often worked this special last year, but not as far as Dinas Junction. This was the first occasion during the present year that I have worked the special as far as Dinas. When I first saw the signal put to danger in front of me I did not take much notice of it, as I thought the points were right for the siding, and that the signalman was preparing to let the down passenger train out, but immediately I reached the points, and saw where I was going, I did all in my power to stop. My engine had the hand brake, and my train consisted of about 22 wagons, some empty and some loaded. I am quite sure that it was the siding signal that was off for me when I approached Dinas Junction. I have never known this special train to be run on the main line past Dinas Junction. It has always been run into the siding.

*William Evans*, fireman, states: I have been in the Company's service six years, and I have been fireman about a year. On the 23rd July I came on duty at 7.30 a.m. to work till 7 p.m.; my usual day's work is from 6 a.m. to 5 p.m. I am usually employed as cleaner in the works. I was firing for driver Paul with the special from Portmadoc. I corroborate my driver's statement. I applied my hand brake as soon as I saw that we were going on to the main line instead of into the siding.

*John Edwards*, porter, states: I have been in the Company's service nearly two-and-a-half years altogether, and I have been for the last two months at Portmadoc as porter. I occasionally work as brakesman on goods and mineral trains when required. On the 23rd July I came on duty at 6.30 a.m. to work till 6.30 p.m. I was employed as brakesman of the special train from Portmadoc to Duffws. We left at 9.15 a.m. On approaching Dinas Junction I saw the distant signal and that was at "all right." I did not see the other signals, I was attending to my brake. We went round the curve at about seven miles an hour. I noticed the driver trying to stop his train. It was then on the north side of the signal box, and I put on my brake. I then noticed that the train was going up the main line, but I did not look at the signals. My train consisted of 22 wagons. Some timber was knocked off one of the wagons by the collision, and one timber truck was derailed. The speed of the special train when the collision occurred was about five miles an hour.

*Samuel Parkins* states: I have been in the employment of the Festiniog Railway Company as an engine driver for 27 years. Was in charge of the double bogie engine fitted up with the vacuum brake, and ran the 10.5 a.m. down passenger train from Duffws to Portmadoc on the 23rd July. Came down towards Dinas Junction staff signal box No. 3, where train was stopped for over ten minutes waiting for the up special goods train. I went to the signal box to ask if the "line clear" had been given to Tanygrisiau, I then went back and got on the engine. The vacuum brake was off, but the hand brake was on. I saw the special coming past the signal box on the wrong line, reversed my engine, but, the brake being on, was not able to move it back before the special engine struck my engine. The special was running past the box about five miles per hour. My engine moved back only some few inches. The buffers in front and rear of my engine were broken. I came on duty that morning at 5 o'clock.

*Thomas Jones* states: I was acting as fireman on the passenger engine with the 10.5 a.m. down train on the 23rd July. Came on duty at 8 o'clock. Have been one-and-a-quarter years on

**the railway, and acting as fireman for 12 months. The passenger train was brought to a stop above Dinas Junction. I put the hand brake tight on the engine after coming to a stop and was looking about the engine, oiling, &c. I did not notice the position of the signals for the up train. After being there waiting for ten minutes, saw the special running up along the passenger line and coming into collision with the passenger train. The special was travelling at a speed of about five miles per hour when passing the signal box. I have been stoking with specials, and have always gone up the mineral siding.**

## *Conclusion.*

The collision occurred under the following circumstances :—

The 10.5 a.m. down passenger train arrived at Dinas Junction at about 10.13. It came to a stand at the down home signal, which was at danger, as an up special mineral train was expected from Tanygrisiau (the next signal box westwards). This mineral train was bringing with it the staff pertaining to the section between Dinas Junction and Tanygrisiau, and it was intended that it should go into the mineral loop so as to pass the passenger train. After a delay of about 15 minutes to the passenger train, the mineral train arrived. Signalman Owen Morris says that he lowered all the up main line signals, viz., distant, outer home, and inner home, forgetting that the down train was waiting on the main line. When the mineral train was about 60 yards from the signal box, Morris put the inner home signal to danger, because, as he says, the train was travelling too fast round the curve and he wished to check it. The driver was unable to stop his train when the signal was thus suddenly put to danger, and the train passed the signal box on the main line, the points not being set for the siding, and directly afterwards collided with the passenger train. By this time the speed was considerably reduced, and the shock of the collision was not severe. The central buffers of the two engines were broken, one wagon was derailed, and the passenger train was driven back a few feet.

The account given by driver Lloyd Paul differs from the above in one very important point. He says that the signals that were off were the distant, the outer home, and the siding signal, and that it was the siding signal that was unexpectedly thrown up in his face as he was approaching it. He states that he knew he had to pass the passenger train at this place, and expected to be turned into the mineral siding. He was not prepared to stop at the signal box, but had the staff ready to give up to the signalman as he passed the cabin. When the siding signal was put to danger he did not think it meant that he was to stop, but merely that the signalman was preparing to reverse the points for the down passenger train as soon as the mineral train had got into the loop. But as soon as he passed the signal box and found that his train was not turned into the loop, he at once reversed his engine and gave her steam and did all he could to stop. He further says that knowing as he did that he had to go into the mineral loop, and that the passenger train was waiting on the main line for his train to pass it, he would have stopped his train if he had found the main line inner home signal off for him, and gone into the signal box to ascertain what it meant.

Whichever version is correct, they agree so far as to show that the signals were off for one road or the other, and therefore the driver of the up train cannot be held to blame for not being prepared to stop at the signal box. If the main line signal was off, it is difficult to account for the signalman's action in lowering it, knowing as he did that the passenger train was waiting on that line, and this is the more inexplicable, in as much the driver of that train had just before the accident left the signal box, to which he had gone to ascertain the cause of the delay to his train. On the other hand, if the signal for the loop was off, it would follow from the interlocking that the points were set for the siding, and it is impossible to understand why the signalman should suddenly have put the signal to danger in the face of the approaching train, and reversed the points. Seeing that the signals in question are properly interlocked with the points, and bearing in mind that the signalman convicts himself by his statement of a gross piece of carelessness, which he would hardly do without some reason, I am inclined to accept his version as the correct one, and to believe that he forgot for the moment that the passenger train was waiting on the main line, that he lowered the up main line signal for the mineral train, meaning it to proceed to Duffws on the main line, and that when shortly afterwards he realised his mistake, he threw the signal to danger in the hope of stopping the train. If this is correct it is probable that the driver of the mineral train finding the signals off for him and expecting to be put into the loop, did not notice particularly which of the two signals was off, but assumed, as was not altogether surprising, that it was the one for the mineral line. In any case the blame must rest upon signalman Owen Morris, who evidently made a gross blunder one way or the other. This man had been on duty about 4½ hours.

No independent evidence could be obtained by me on this matter of the signals. The driver and fireman of the passenger train, and the guard of the mineral train each and all declare that they did not notice which signal it was that was lowered. This may be true, but it is far from satisfactory to find that men pay so little attention to the signals, which affect the safety of the trains of which they are in charge.

During the course of this inquiry it came to light that signalman Morris is in the habit of not keeping the train tickets in the box allotted to them until the moment they are required. This box can of course only be opened by means of the train staff, and no ticket can be withdrawn unless the staff is in the signal cabin, and this should only be done at the time that a ticket is required for any particular train. But Morris seems to have made a practice of taking out a supply of tickets in the early morning so as to have them available for future use, without requiring the staff on each occasion when he desired to issue a ticket. In this particular instance Morris had a ticket ready to give to the driver of the mineral train, although the staff was not in the signal cabin, the ticket having, as he acknowledged, been taken out of the box some two or three hours previously. The danger involved in such a proceeding will be patent to anyone accustomed to single line working. The whole safety in the use of train tickets in combination with the staff, depends upon *the staff being present in the box and shown to the driver* when a ticket is issued to him, and it seems hardly credible that any signalman should be so indifferent to the safety of the traffic as to issue a ticket without having the staff in his possession, or that any driver should be so reckless as to accept a ticket under such circumstances. In extenuation of the signalman's culpability I would point out that the Company's rules do not lay down definitely the conditions under which a train ticket may be issued and received. No time should be lost in remedying this defect, and the Company should be urged to adopt the rules for single line working (and especially the rules relating to the issue of train tickets) which have been drawn up and accepted by the Associated Railway Companies, but which, for some reason or other, are not in force on the Festiniog Railway.

It has already been stated that there is a mineral loop or siding parallel to the main line between Dinas Junction and Duffws, and it has been the custom to regard the staff and tickets as applying equally to both these lines. This is manifestly wrong. If under these conditions the rules as to staff and ticket working were strictly enforced, the two lines become practically one, and no advantage is obtained from the existence of the second line. If, on the other hand, the rules are not acted upon, a dangerous mode of working arises, similar to that which has just been pointed out. The staff and tickets should, in future, apply to the main line only, the traffic on the mineral line being conducted under such special regulations as the Company see fit to adopt.

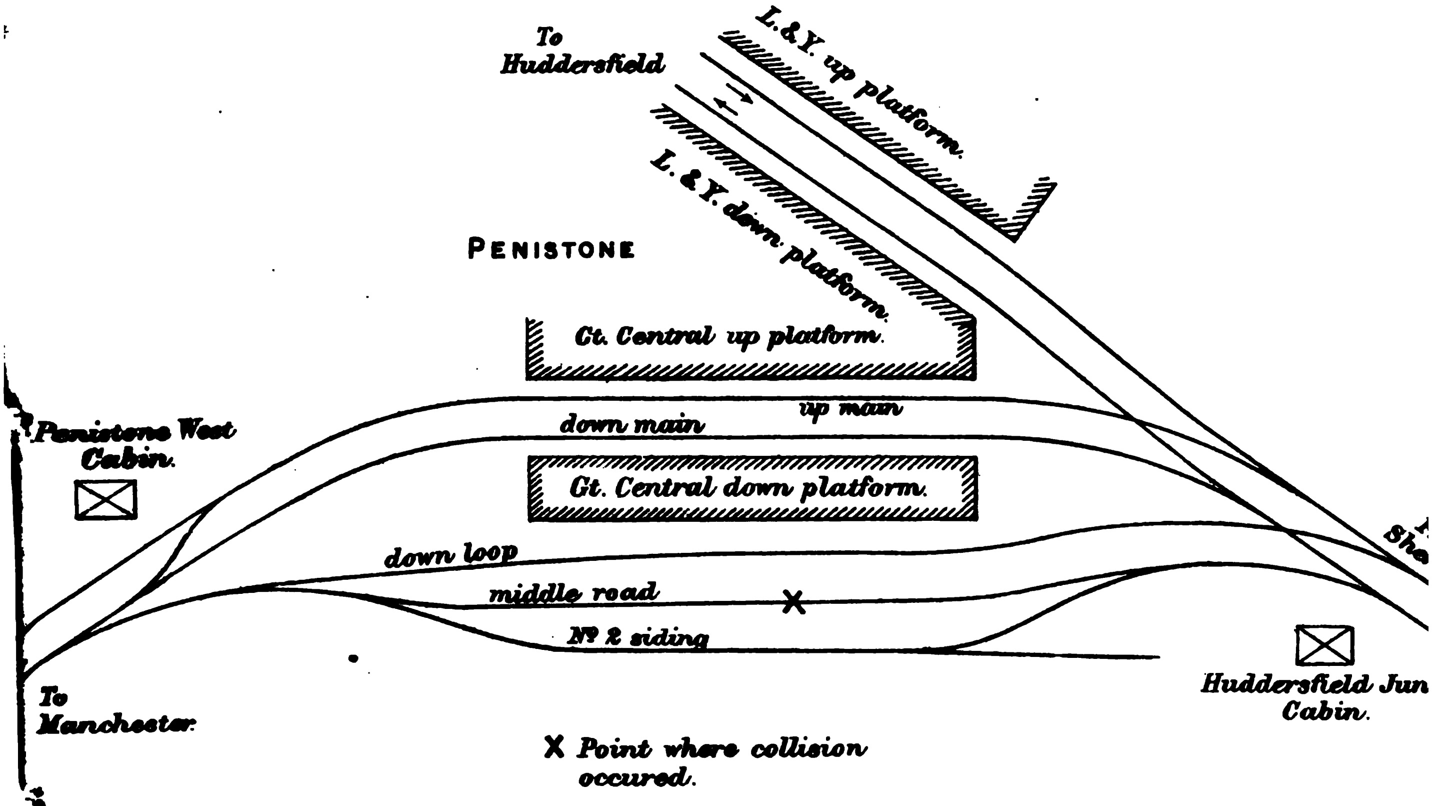
Again, signalman Morris states that when he threw the signal to danger in front of the approaching train, he did so, not for the purpose of stopping it, but merely to check it. This is a totally wrong method of using signals. A signal, other than a distant signal, when in the danger position, should have no other meaning than an imperative direction to the driver of a train approaching it to stop. It may be that the present practice is due to the fact that the outer home signal can only be lowered when one or other of the inner home signals is "off," or in technical terms, No. 12 signal is released or preceded by No. 11 or No. 10. I would recommend that the locking be altered, so that No. 12 outer home signal can be lowered independently of No. 11 or No. 10. At the same time the distant signal No. 1 should be made to apply only to the up passenger line, and not to the mineral line. The attention of the Company should, I submit, be drawn to the matters referred to above, and especially to the present dangerous manner of using train tickets.

I have, &c.,
H. A. YORKE.
*Lieut-Col., R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

Printed copies of the above Report were sent to the Company on the 12th October.

# PENISTONE STATION.



## GLASGOW AND SOUTH-WESTERN RAILWAY.

Board of Trade (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.,
14th January, 1898.

SIR,

I HAVE the honour to report for the information of the Board of Trade, that in compliance with the order of the 30th November 1897, I have enquired into the collision that occurred at 6.23 a.m. on the 25th idem at Clippens, on the Glasgow and South-Western Railway.

In this case the workmen's train leaving Glasgow at 6 a.m. overran the platform at Clippens and came into collision with the buffer-stops at the end of the siding, it being quite dark at the time.

Three passengers were slightly injured.

The train consisted of a four-wheels-coupled passenger engine, tender, and five vehicles. The engine was fitted with the Westinghouse brake, while the train had the vacuum brake, and both descriptions of brake should have been applied by the movement of one handle. But this was not the case on this engine, the brakes being independent of each other, and applied by separate handles.

No damage was caused to the engine, tender, or permanent-way, and no wheels left the rails. The train had two windows broken, and the buffer-plank of the stops, which was somewhat decayed, was smashed.

### *Description.*

Clippens is not a station, but merely a rough platform, made of old sleepers, which has recently been erected and brought into use for the convenience of the workmen employed at some neighbouring oil works.

It is situated at the end of a siding near Cart Junction, on the down or north side of the lines, and is connected with the down main line by trailing points. Trains from Glasgow for Clippens arrive at Cart Junction on the up line, are backed through a cross-over road to the down line, and then have to travel in the wrong direction along the down road as far as the points leading into the siding, a disc signal and a skeleton arm signal being provided for this operation. The switches and signals are operated from Cart Junction signal box, from which, to the siding points, the distance is 282 yards. These points being facing to trains entering the siding from the down line, have been provided with facing point lock and locking bar, but they are 102 yards outside the distance from the signal box laid down as the limit for facing points.

The siding is 348 yards long, and terminates in a "dead end" consisting of earth and timber. At the end of the siding there is a temporary platform 48 yards in length.

From Cart Junction there is a falling gradient of 1 in 100 up to the siding points, from which spot the lines are level, as also is the siding.

There are three lamp posts on the platform, but up to the date of the accident only one lamp was provided by the Company.

### *Evidence.*

*James Wells*, driver, states:—I have been in the Company's service 12 years, and I have been passed as a driver for more than two years. On the 25th November I came on duty at 5 a.m. to work till about 3.30 p.m. I was working the 6 a.m. train from St. Enoch to Clippens. This is a workmen's train. My engine was No. 203, a six-wheeled engine with four wheels coupled. It is a passenger engine and is fitted with the Westinghouse brake, and also with the vacuum apparatus for operating the brakes on the train. There is also the hand brake on the tender. The Westinghouse brake and vacuum brake can be applied by one handle, but by disconnecting the Westinghouse brake handle from the vacuum brake it is possible to work the two brakes separately. The connecting link between the two brakes on this engine has not been fixed since I have been on the engine. This would be since July last. I have not reported that the link was missing between the two brakes. The workmen's train consisted of five vehicles. This is the usual train and it was fitted with the vacuum brake. The brake connection was properly made throughout the train. I do not know whether the brake was tested by the guard before starting from Glasgow. We stopped at Shields Road and the brakes were working all right. When I reached Cart Junction I was put across on to the down road in the usual way, and I then got the signals to go down into the siding. It was a dark morning—there were no lamps on the platform, but there was a white light on the buffer stop. I saw the lamp man running down with the lamp in his hand as I entered the siding. He had put the lamp on the stops before I reached them. Sometimes there is no lamp on the siding stops. It would be better if the light was a red one instead of a white one. When I got the signals to go into the siding I gave the engine a little steam just to start the train. I shut off steam again before I left the main line. As I was entering the siding I applied the vacuum brake gradually. When I reached the platform I thought I was not going to stop in time, and so I applied the vacuum full force, and then I applied the Westinghouse hard. Owing to the greasiness of the rails the wheels slid, and the engine struck the stops at a speed of about two miles an hour. When I entered the siding I was not going more than six miles an hour. I think my fireman applied the hand brake going into the siding. I have often worked this train before, with the same engine. I have never had any difficulty in stopping it before. I have never struck the stops before. I was not going into the siding any faster than usual. I did everything the same as I do on other mornings. I had from 18 to 19 inches of vacuum when going into the siding. The Company's rule is that trains should enter dead end bays or terminal stations at such a speed that they can be stopped with the hand brakes. I attribute the mishap to the morning being dark, to there being no light on the platform, and to the rails being greasy. We were running chimney first. I had no time to reverse my engine or apply sand.

*Andrew Hill*, fireman, states :—I have been in the Company's service about three years, and I have been fireman for two years. On the 25th November I was firing for driver Wells, and came on duty at the same time as he did. I agree with my driver's statement. I applied the hand brake as we reached the platform. I could not see the light on the stops from my side of the engine—it was all pitch dark to me.

*George Holden*, guard, states :—I have been in the Company's service four years, and I have been guard all the time. On the 25th November I came on duty at 5.30 a.m., to work till 3 p.m. I was guard of the workmen's train leaving St. Enoch at 6 a.m. The train consisted of three third class carriages and two brake thirds. All of these were six-wheeled vehicles. They were all fitted with the vacuum brake, working blocks on the leading and trailing wheels. The brake was connected throughout the train. I did not test the brake, but I saw the gauge in my brake compartment shewed 18 inches of vacuum before starting. Everything went right till we got to Clippens. We entered the siding at Clippens at about five miles an hour. I applied my hand brake when we got to the bridge over the river. The driver applied the vacuum brake when entering the siding. He applied it again when he was at the platform. He then put it on with full force and destroyed the vacuum. I thought he was rather later than usual in applying it. I did not see any light on the buffer stop, nor did I see the lampman. It was very dark. I had only been with the workmen's train four times before, and on none of these occasions have I seen a light there. I was sure the driver would not stop in time, and so I jumped out of my van on to the platform. There was a slight rebound. Two windows were broken in the train, and one was cracked. Three passengers complained to me of slight injuries. I think we struck the stops at about four miles an hour. None of the wheels left the rails. I could not apply the vacuum brake myself before jumping out of my van, because the driver had already destroyed the vacuum.

*Thomas McClymont*, lampman, states :—I have been in the Company's service between three and four months. I have been lampman all the time. I am stationed at Johnstone. My duties are to clean, trim, and light the signal lamps at Johnstone, Nos. 1 and 2 signal boxes, and also light the lamps at Elderslie and Cart Junctions. I have also to go in the morning to light the lamps on the platform and buffer stop at Clippens. Until this mishap occurred there was only one platform lamp for Clippens, which was kept in the signal cabin at Clippens. Now three lamps have been provided. There is a lamp in Cart Junction signal box for the buffer stops at Clippens—this is an ordinary signal lamp. I have always lighted the buffer stop lamp when I thought it necessary—that is to say, on dark mornings. I have never received any instructions to put a light on these stops, but some of the drivers have said it would be better if there was a light on them, and so I put it there. My hours of duty are from 5.30 a.m. till 5 p.m. I always go straight to Clippens platform in the morning to see to the lights there. This is about half a mile from Johnstone. I had no instructions from the last lampman as to lighting the lamps at Clippens. On the 25th November I was on the platform when the train came to Cart Junction box, and I had placed the lamp on the stops before the train got into the siding. I have always been at the platform before the train arrived. I have sometimes ridden down from the Junction on the foot plate of the engine, but this was before the dark mornings, when the lamp was not required. I began to light the lamp for the buffer stops about a fortnight before the accident. I have never missed a morning, except when it was moonlight. I have to go every morning to open the gate from the platform. I have three lamps now for the platform at Clippens, and also a red light for the buffer stops.

## *Conclusion.*

The train to which this accident happened has recently been put on for the convenience of the workmen employed at some oil works near Clippens. On the day in question, it left Glasgow at 6 a.m. and arrived at Clippens about 6.23. At Cart Junction it was backed across from the up to the down line, in the usual manner, and after travelling along the down line in the wrong direction for 282 yards, it entered the siding through the points already mentioned, and it then had 348 yards to run, up to the end of the siding.

Instead of stopping his train short of the "dead end," the driver miscalculated his speed and the distance he had to run, with the result that his engine came into collision with the buffer-stop. The passengers were doubtless preparing to alight, and the sudden stoppage of the train caused three of them to receive slight injuries.

The morning was very dark, and there were no lights on the platform ; and although there appears to have been a light on the buffer-stops, it was placed there but a moment before the collision, and too late to be of any service to the driver, by indicating to him his position.

As a general rule, there appears to me to be very little excuse for a driver who allows his engine to strike buffer stops. But in this case the driver can hardly be held to blame, for the reason that the platform was without any lights, and owing to the darkness it was therefore difficult for him to make out his exact position.

Nor am I disposed to find fault with lampman McClymont. This lad has only been in the Company's service for three or four months, and he appears to have received no instructions from anyone in authority regarding his duties at Clippens. Only one platform lamp was provided by the Company for this place, and though McClymont seems to have adopted a practice of placing a lamp on the buffer-stops, he did so of his own initiative for the guidance of the drivers, and had to borrow for the purpose an ordinary signal lamp from Cart Junction signal box. No doubt on the morning in question he was somewhat late in placing the lamp in position on the stops, but his action in putting it there at all was purely voluntary, and any delay in the matter should not render him liable to censure.

The cause of this collision must be found in the very inadequate precautions taken by the Company for the safe working of this train. In the first place, I would point out that Clippens platform was brought into use without any notification from the Company to the Board of Trade, and without any official inspection or sanction. Probably the temporary platform, as it exists, is sufficient for the convenience of those for whom it has been erected, but workmen travelling by train are passengers, and as such are entitled to the usual precautions for their safety, and the arrangements at Clippens are open to unfavourable criticism. The practice of backing a train through the cross-over road, from the up to the down line, and causing it to travel in the wrong direction along the down line, is objectionable, while the want of sufficient lamps on the platform, and more particularly the absence of a proper light on the buffer-stop, are far from satisfactory.

The points leading into the siding, which though "trailing" to trains travelling in the proper direction on the down line, become "facing" to trains entering the siding, are too far from the signal box, and would not have been passed as facing points, in their present position, by an Inspecting Officer of the Board of Trade.

And, lastly, the fact that the brake on the engine and that on the carriages were not applicable by one and the same handle does not appear to be in accordance with the provisions of the Act of 1889, for it is evident that the brake was not continuous throughout the train, and that on the engine could not be applied by the guard.

It is to be hoped that the Company will take early steps to remedy these matters. I would suggest that a platform be built alongside of the up line at which the workmen going to Clippens could alight on arrival, the existing platform being used as a departure platform only.

When the necessary alterations have been made the place should be submitted for inspection in the ordinary course.

I have, &c.,
H. A. YORKE,
*Lieut.-Col., R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

**Printed copies of the above Report were sent to the Company on the 27th January, 1898.**

# GREAT CENTRAL RAILWAY.

Board of Trade (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.,
November 3rd, 1897.

SIR,

I HAVE the honour to report for the information of the Board of Trade, in compliance with the Order of the 18th ult., the result of my enquiry into the circumstances attending a collision that occurred about 9.30 p.m. on the 10th October at Penistone station on the Great Central Railway.

On the arrival of the 5 p.m. express from London the engine and four vehicles were detached and moved ahead, on the down main line, to allow of a through carriage for Bradford, viâ Huddersfield, being transferred to the Lancashire and Yorkshire Company's down platform. The through coach was, by a misunderstanding, uncoupled too soon and it ran back, on a falling gradient, about 200 yards, where it came into collision with engine No. 10, belonging to the Lancashire and Yorkshire Company, which was approaching to take it away.

Five passengers are reported to have complained of injury, a lady having since died from the effects of the shock and injuries she received.

No wheels of the engine or carriage left the rails. The latter was a composite carriage, belonging to the Great Northern Company, and it had side panel, headstock, diagonal, body stop, two buffers and two corner plates damaged, and the body shifted.

## *Description.*

Penistone station is situated on the main line of the Great Central Company from Sheffield to Manchester, and at the up, or south-east, end of the station there is a junction with the Lancashire and Yorkshire Company's line to Huddersfield. The general arrangement of the station, and of the lines through it, will, I think, be readily understood from the plan attached to my report, and as no question of the signalling arises in connection with this collision it is not necessary for me to describe it. It should, however, be added that the down main line through the station is on a gradient falling towards Sheffield at 1 in 106, while the inclination of the middle road, at the back of the down platform, on which the collision took place, is rather steeper, viz., 1 in 101.

## *Evidence.*

*William Burton* states : I have been 25 years in the Lancashire and Yorkshire Company's service, eight years a driver. On October 10th, I came on duty at 2.45 p.m. to work until 11.45 p.m., and I generally finish work on that tour of duty at from 11.45 to 12 midnight. My engine, No. 10, is an eight-wheeled radial tank engine (four wheels coupled). I arrived at Penistone, from Huddersfield, at 9.23 p.m. After the passengers had got out I put the train on to the down branch road, and then the engine was unhooked and we went out from the Lancashire and Yorkshire down line, and were put across on to the middle road on the down side of the Great Central Company's station. We were due at 9.4 and did not arrive until 9.23, having been delayed at Lockwood waiting for the branch line connection. If we had arrived to time, I should then, after disposing of my train, have been sent along the down main line to the West cabin, and should have set back there over the points on to the down loop line ; then, as soon as the train from London had arrived, and its engine had taken the through carriage for Bradford—viâ Huddersfield—forward over the cross-over road points at the West cabin, we should have gone forward, got hold of that carriage, and taken it away on to the up main line. We are coupled to the carriage by shunters, the vacuum brake is connected and we have to take the brakes off the carriage wheels before we can start. We have to blow up, to blow the brake off. I have only to take this carriage on Sundays, one week in five. On the occasion under consideration, when we got alongside the down platform, on the middle road, the shunter who was riding with me, said "Woa, it's coming down." We were running bunker first, and he said "Go ahead," *i.e.* so as to get out of the way. I reversed, and opened the regulator again, and the engine had just moved when the carriage struck us ; I at once stopped and put the brake on, and we probably did not go forward more than about an engine length. Neither I, my mate, nor the shunter (so far as I am aware) was hurt, and the engine was not damaged at all. The carriage belonged to the Great Northern Company. It was quite dark at the time, and there was no light on the carriage.

*Robert Hunt* states : I have been station-master at Penistone for nearly 11 years. With reference to what driver Burton has said, we only send a shunter with the Lancashire and Yorkshire engine when there is any reason to doubt if the driver is thoroughly acquainted with the roads. If the engine goes by the down main line, there is no necessity for sending a shunter with it. It is a daily occurrence to transfer a through carriage from the down main line to the down Huddersfield line, and the operation is carried out in the way described by Burton. The Lancashire and

Yorkshire train is occasionally late on Sundays, but, as a rule, it arrives in sufficient time to enable the engine to be at the down end of our station, waiting for the arrival of the London train. I was on the station, on duty, at the time of the mishap. I saw the carriage running back, when it about arrived at the down end of the station buildings; my attention was then given to the train *ex* London, the front portion of which was setting back on to the rear portion at the down main platform. I heard my foreman, who was on the ballast at the back of the station, calling out to the Lancashire and Yorkshire driver to stop. I did not actually see the collision take place. Sometimes, if the up main line is occupied, the pilot engine will take the through carriage by the middle road to Huddersfield Junction, and then on to its train at the down branch platform. The carriage is never, under any circumstances, allowed to run back by gravitation on to the engine. On Sundays we have no spare engine available, and if the Lancashire and Yorkshire train is very late, the engine *ex* London backs the Huddersfield carriage into the middle road, where it is left, properly secured (not relying on the brake) until the Lancashire and Yorkshire engine comes to fetch it.

*John Turner* states: I have been in the Great Central Company's service 17 years, and a foreman porter for six years. On October 10th, I came on duty at 7 a.m. to work until 10 p.m., but I was off duty for three or four hours during the day. I perform that duty every alternate Sunday. After the arrival of the London train, I got down on to the ballast, to signal the Lancashire and Yorkshire engine forward. While there I noticed the signalman throw the siding signal to danger, and I then saw the carriage coming down towards me—which I have never known it do before—I gave a red light to the Lancashire and Yorkshire driver, he would then be about the length of the buildings away from me, and the carriage was getting pretty close to me. I shouted out at the same time. The Lancashire and Yorkshire engine only came forward a very short distance afterwards. No wheels, either of the engine or carriage, left the rails.

*Benjamin Haigh* states: I have been two-and-a-half years in the Great Central Railway Company's service, and a parcel porter for four months past. On October 10th, I came on duty at 10.30 a.m. to work until 10 p.m., and I am on duty on alternate Sundays. On the arrival of the 5 p.m. express from London, I uncoupled the fourth vehicle from the rest of the train, and I rode out on the footboard of the Bradford carriage to the West cabin. I have done this regularly for the last 14 months. When we were well clear of the cross-over road points, I signalled to the driver to stop. I got down, broke the communication cord between the third and fourth carriages, and dropped the side chains. I then asked porter Duval, who was with me, what we were going to do with the Huddersfield carriage, as the Lancashire and Yorkshire train was late. I understood him to say the engine was there to take it away, so I dropped the shackle hook off, and went to the other end to attach the engine. We always have two men, one to detach and one to attach, but in this case, my lamp had been knocked down and the light put out, and Duval was occupied lighting it. Before I got to the other end of the coach, I saw the engine was not there. I had left the automatic brake pipe on the plug properly secured. I ran back to the front of the vehicle to couple up the side chains, but I found it had already started moving; I picked up a large cinder off the ballast, and put it on the rail behind the carriage, but it was no good. The carriage is never allowed to run back by itself.

*Arthur Duval* states: I have been nearly three years in the Great Central Company's service, and a porter for three years. On October 10th, I came on duty at 1.30 p.m. to work until 10 p.m. When the engine of the London train went forward, I went down with the vehicles, riding on the footboard of the Bradford carriage, to hook the engine on when it arrived. When we stopped near the West box, Haigh told me his lamp was out and he asked me to light it. He had asked me what we were to do with the coach, and I told him the Lancashire and Yorkshire engine was coming to take it. I had been so instructed by the foreman. I always get definite instructions before we go out. Sometimes the London engine has to back the carriage into the middle road. Haigh is only on duty with me about once in three weeks. The man who unhooks the carriage waits until he feels the engine come on to it, and then unhooks; afterwards he rides at the tail of the carriage, showing his red light, and I return to the down main platform with the train. I had no sooner struck a match than Haigh said "the carriage is running back." I jumped up and tried to get my hand lamp down as a scotch, to stop it. I ran back with the carriage some distance until I fell down over some wires. The scotches are kept in the back road, and there were none handy for me to use. My instructions from the station-master are that if anything is to be unhooked, without the engine being on it, before doing so the vehicle must be properly secured without relying at all on the automatic brakes.

*John Francis Halder* states: I have been four years in the Great Central Company's service, and a porter one-and-a-half years. On the 10th October I came on duty at 1.30 p.m. to work until 10 p.m. After the Lancashire and Yorkshire train had been shunted to their down platform, I went to the engine, having been told by the foreman to bring it round to the West box through the middle road. As we were coming up the middle road I was looking out ahead on the left-hand side, with one foot on the footplate, the driver was on the other side. It was a very dark night. I heard someone calling out. I saw something coming, but I did not know it was the loose carriage. At the same time I saw a red light being shown from the middle road by someone on the ballast. I said to the driver "there is something amiss." I then saw a signal for us to go back, and I told him of it. He stopped, and had just started back when the accident happened. I was not hurt at all.

*Frank Moore* states: I have been in the Great Central Company's service eight years, and a signalman six years. For the last three months I have been employed in Penistone West signal box. On the 10th October I came on duty at 6 p.m. to work until 6 a.m. Excepting on Sundays, it is an eight-hour box. On the above date the 5 p.m. express from London arrived at 9.29. There is always a through carriage on from London. My home signal (platform down starter) was off. The engine came out with some vehicles, and stopped with the rear coach past the cabin at about 9.31. The Lancashire and Yorkshire engine is generally waiting in the middle road to pick up the vehicle, and as soon as the London vehicles came to a stand on this occasion, I set the points and lowered the middle road signal. I could not see whether the engine was there or not. Directly afterwards

**I was told on the telephone that the engine was coming through the middle road, and just then the shunters called out to tell me the vehicle had got the master of them. I told the Huddersfield Junction signalman what had happened, and asked him to try to stop the engine, if possible, which he said he could not do, as it had gone past. The down loop and No. 2 siding were occupied, and I could do nothing, therefore, but let the vehicle go along the centre road.**

## *Conclusion.*

It appears from the evidence that on Sunday, October 10th, the 5 p.m. express from King's Cross to Manchester arrived at Penistone station at 9.29—20 minutes late. The fourth carriage of the train was a through coach for Bradford, viâ Huddersfield and the Lancashire and Yorkshire Railway, and in order to get it to the down Huddersfield line it was necessary, in the first instance, to draw the four leading carriages out of the down main platform to the points near Penistone West signal box ; they were accordingly uncoupled from the rest of the train, and the signalman says they came to a stand, at about 9.31, with the through—*i.e.*, the rear—coach just past the cabin, where the line is on a gradient falling towards Huddersfield Junction at 1 in 106.

The Huddersfield train engine should have been waiting on the down loop line, ready to pick up the carriage referred to above, and to take it through the cross-over road on to the up main line to the junction points at the other end of the station. That train had, however, also arrived at Penistone considerably behind the booked time, viz., at 9.23 instead of at 9.4, and, after the passengers had got out, the train had to be moved from the up to the down, Lancashire and Yorkshire, platform ready for the return journey. When the train had been disposed of the engine was detached, and the latter was then sent from Huddersfield Junction towards the West cabin by the middle road at the back of the down main platform—porter Halder accompanying the engine to act as a shunter, in view of the driver not being very well acquainted with the roads through the station. On reaching a point about midway between the junction and the West cabin the men on the engine suddenly became aware of the fact that the carriage was running down the middle road towards them, and that someone was signalling to them to go back ; the driver reversed his engine, and had just got it in motion again when the collision took place with the unfortunate result recorded above. It is stated to have been a very dark night, and no blame is, in my opinion, to be attached to these men.

When the carriages off the train *ex* King's Cross drew forward, out of the down main platform, two porters were sent with them, one to couple the Lancashire and Yorkshire engine on to the through carriage, and the other to unhook that carriage from the other vehicles. Porter Haigh, whose duty it was to attend to the latter operation, is not a man of very much experience, but he says he has been doing the same work for the last 14 months and he is fully aware that the carriage should not be unhooked until the engine, to take it away, has actually come back on to it. On this occasion Haigh's lamp had gone out, and he asked the other man to light it for him ; he proceeded to make preparations for detaching the carriage, and while the two men were occupied in this way Haigh says he understood porter Duval to tell him, in reply to his query, that the engine had arrived and was close to the carriage. To save time, Haigh unhooked the carriage and ran round to the other end to couple it on to the engine, when he found the engine was not there, and the carriage immediately began to move down the falling gradient. The efforts of the two men to stop it were of no avail, and the points being set for the engine to run through the middle road on to the down main the carriage naturally followed that road and came into collision with the engine, as already explained, after running back about 200 yards.

The responsibility for the mishap clearly rests with porter Haigh, but I do not consider that any deliberate want of care was shown, or, therefore, that his fault was a very grave one. The accident should, however, be a warning to all concerned of the danger of deviating in the slightest degree from the authorized mode of working. It should be added that when the automatic vacuum brake apparatus on the carriage was examined after the accident a leakage was found in the diaphragm, and if the vacuum in the cylinder had not leaked off very rapidly porter Haigh's premature action would, probably, have not led to any bad results. At the same time, it is a well understood rule that the automatic brake must not be alone relied on, to hold a detached vehicle on a falling gradient, during shunting operations.

I have, &c.,
G. W. ADDISON,
*Lt.-Col.*, *R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

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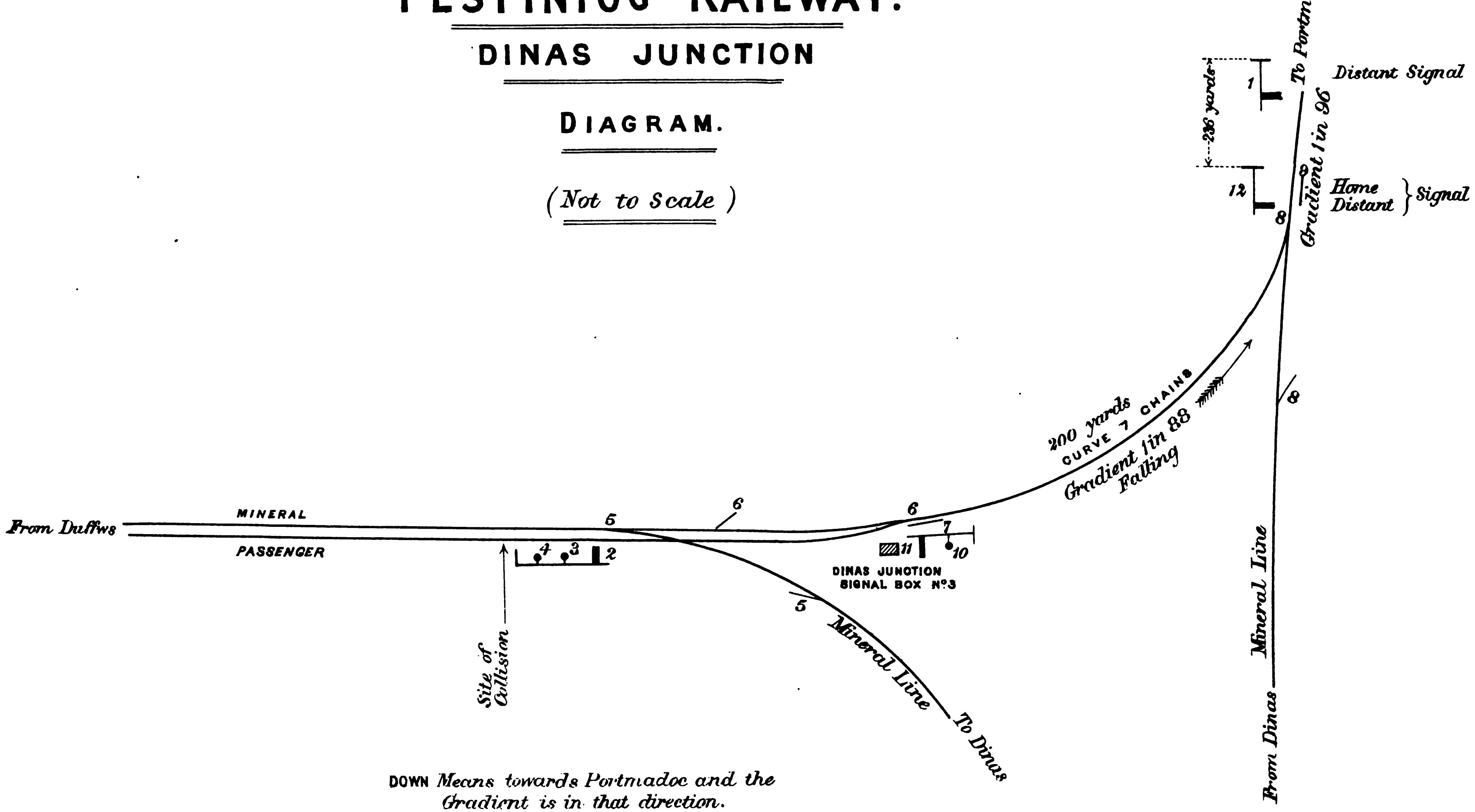
**Printed copies of the above Report were sent to the Great Central, Great Northern, and Lancashire and Yorkshire Companies on the 1st January, 1898.**

# FESTINIOG RAILWAY.

## DINAS JUNCTION

### DIAGRAM.

(*Not to Scale*)



**DOWN** *Means towards Portmadoc and the Gradient is in that direction.*

Wyman & Sons Ltd Lith

## GREAT EASTERN RAILWAY.

Board of Trade (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.,
December 31st, 1897.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 20th instant, the result of my enquiry into the causes of a collision that occurred at 5.31 p.m. on December 18th near Globe Road station on the Great Eastern Railway.

In this case, the 5 p.m. passenger train, from Liverpool Street to Norwich, after standing about three minutes at the down through line home signal of Canal signal box, between Globe Road and Coborn Road stations, was, just as it started again, run into in rear by the 5.3 p.m. passenger train from Liverpool Street to Chelmsford. There was a thick fog at the time, and both trains had left Liverpool Street about 23 minutes late.

Only six passengers complained at the time of injury, but 19 in all have now complained of shock or minor injuries. A guard of the Norwich train, who was riding in brake van No. 724, had his shoulder dislocated, and the driver of the Chelmsford train was shaken a little.

The 5 p.m. passenger train, Liverpool Street to Norwich, consisted of :—

Engine No. 1036.
Brake van No. 727.
Composite carriage No. 518.
Composite carriage No. 516.
Composite carriage No. 515.
Composite carriage No. 129.
Third-class carriage No. 1408.
Brake van No. 767.
Third-class carriage No. 709.
First-class carriage No. 223.
Composite carriage No. 527.
Composite carriage No. 536.
Brake van No. 724.
Slip carriage No. 480.
Composite carriage No. 256.
Brake van No. 387.

The 5.3 p.m. passenger train, Liverpool Street to Chelmsford, consisted of :—

Engine No. 754.
Third-class carriage No. 830.
First-class carriage No. 151.
Second-class carriage No. 67.
Second-class carriage No. 102.
Second-class carriage No. 474.
Second-class carriage No. 29.
First-class carriage No. 168.
Composite carriage No. 6.
Third-class carriage No. 896.
Third-class carriage No. 1139.
Brake van No. 716.
Milk van No. 1319.

Both engines were 6-wheeled passenger tender engines, with driving and trailing wheels coupled, and the trains were fitted throughout with the Westinghouse automatic brake.

In the 5 p.m. train, one pair of wheels of first-class carriage No. 223, and the trailing wheels of the rear brake van (which was destroyed) left the rails, carriage No. 223 being also buffer-locked with carriage No. 709. The engine of the 5.3 p.m. train was derailed and somewhat damaged. Full details of the damage to rolling stock are given in an Appendix.

### *Description.*

Globe Road and Devonshire Street station, as it is called, is only about 1¼ miles from Liverpool Street, on the main line of the Great Eastern Railway to Norwich *viâ* Chelmsford and Ipswich. There are four passenger lines, viz., up and down local and up and down main, or through, lines, the station being provided with platforms for the local lines only—which are on the north side of the railway. The signal cabin, known as Devonshire Street box, is at the east or down end of the station between the up local and down through lines.

The only signals which need be referred to are those applicable to the down through line traffic ; the starting signal is almost opposite to, but a few yards east of, the signal box ; the home signal is 404 yards, and the distant signal 766 yards, west of the starting signal ; the starting and home signals are on the up side of the line, the distant signal being on the down side.

The signal cabin next west from Devonshire Street box is Bethnal Green East Junction, 924 yards, and the next cabin on the east is Canal box, 484 yards away. Between Devonshire Street starting signal and Canal box home signal there is an interval of only 370 yards, and the collision occurred at a point between the two, about 147 yards east of the former signal.

It should be added that there is a distant signal for Canal box underneath Devonshire Street starting signal, the height of the semaphore arms above rail level being 34 feet and 40 feet respectively.

The line is worked on the electric lock and block system, and the following are extracts from the Company's regulations which bear upon the accident under consideration, viz. :—

**Sykes' system.**—*The object of this system of Electric Train Signalling is to prevent more than one train being between two Signal Boxes on the same line at the same time. This is accomplished by a signalman not being able to lower his Starting Signal (or the Signal controlling the entrance to the Block section ahead) until that Signal has been Electrically released by the Signalman at the Signal Box in advance, who cannot so release the Signal until the preceding train has passed over a Rail Contact in advance of his own Starting or other Signal controlling the section ahead. The signalling of trains on the Electric Lock and Block system does not in any way dispense with the use of Fixed, Hand, or Detonating Signals, whenever and wherever such Signals may be requisite to protect obstructions on the Line.*

**Normal position of fixed signals.**—*The DANGER Signal must be kept exhibited at all the Fixed Signals, except when it is necessary to lower or turn them off for a train to pass ; and, before any Signal is lowered or turned off, care must be taken to ascertain that the Line is clear, and that the Block and other Regulations have been duly complied with.*

**Working of fixed signals.**—*Signalmen must not lower the Home Signal for an approaching train which has to stop at the Starting Signal until the train is close to the Home Signal, and has been brought quite, or nearly, to a stand at it. In the case of a train not booked to stop, and at intermediate Signal Boxes, the Home Signal must not be lowered to admit the train as far as the Starting Signal until it has been* brought to a stand *at the Home Signal. In foggy weather, or during falling snow, the Engine-driver must, when practicable, be verbally informed that he is only to draw forward towards the Starting Signal.*

The " Mode of signalling " and of giving " Clear " need not be described in detail, but there are two points which, perhaps, require further explanation, viz.,

(1) The signalman at Bethnal Green is free to lower his down starting signal, with the permission of the Devonshire Street signalman, so soon as the first vehicle of the preceding train passes over a rail contact 160 yards in advance of the latter's starting signal.

(2) In consequence of the distance of the home signal from Devonshire Street box, and the consequent difficulty of seeing anything standing at that signal, there is a rail contact 93 yards west, or in rear, of the signal ; when an engine passes over the contact, or any portion of a train is standing on it, a bell rings in the signal box as a reminder to the signalman. If the starting signal is at danger, the signalman should wait until the bell rings before lowering the home signal to "admit the train as far as the starting " signal."

The following extracts from the Company's rule book as regards " signalling in foggy " weather " may also be quoted :—

"*If fog-signalling for a distant signal, he* (i.e., *the fog signalman*) *must place himself outside the*
" *signal in connection with which he works, and as far from it as is consistent with his keeping it well*
" *in sight ; and whenever a train has passed him in the direction of the signal box from which the*
" *signal is worked, and so long as the signal exhibits the danger signal, he must place and keep two*
" *detonators fixed, 10 yards apart, on one rail of the line for which the signal is at danger, and,*
" *unless instructions are issued to the contrary, exhibit a red hand signal to the engine-driver and*
" *guard of an approaching train. When the signal is lowered or taken off he must remove the*
" *detonators from the rail, and exhibit to the engine-driver and guard a green hand signal, which*
" *must be held steadily in the hand.*

" *When fog signalmen are employed in connection with home or starting signals, they must place*
" *two detonators, 10 yards apart, on one rail of the line for which the signal is at danger, exhibit a red*
" *hand signal to the engine-driver of an approaching train, and carry out any instructions they may*
" *receive from the signalman on duty.*

" *When there is a distant signal arm on a home or starting signal post, it will not be necessary to*
" *put down more than two detonators, although both signals are at danger, but the fog signalman*
" *must not take up the detonators unless both signals are lowered.*

"*Should the home or starting signal be lowered and the distant signal remain at danger, the fog signalman must continue to exhibit his red hand signal, and if the fog is so dense that the engine-driver cannot see the distant signal, the fog signalman must verbally caution him by using the words, 'home signal off—distant on,' or 'starting signal off—distant on,' as the case may be.*

"*After having fixed the detonators on the rails, fog signalmen must place themselves between the detonators and the fixed signal . . . for which they are signalling, and so exhibit the fog signals that they may be seen by engine-drivers after the engine has exploded the detonators.*"

"*Fog signalmen must stand in the best position (having regard to their own safety) for effectively giving the hand signals to the engine-driver and guard.*

"*When an engine explodes a detonator in foggy weather, the engine-driver must immediately reduce speed, and bring his train under complete control, so as to be prepared to obey any signal that may be exhibited. If he receive a red or danger hand signal, he must at once bring his train to a stand, and then proceed cautiously to the point the hand signal is intended to protect, or until he receive a signal to proceed, unless he be satisfied that the hand signal is exhibited for the purpose of repeating a distant signal at danger, in which case he must, after having reduced speed, proceed cautiously towards the home signal.*"

The down through line is level approaching Devonshire Street home signal, and then falls slightly, at 1 in 319, to the starting signal.

## *Evidence.*

*Alfred Peachey* states: I have been 34 years in the Company's service, 17 years a driver. On December 18th I came on duty at 7.45 a.m. to work until 7.35 p.m. I have no time off my engine during that tour of duty. My engine, No. 754, is a four-wheels-coupled passenger tender engine, fitted with the Westinghouse automatic brake, and a hand-brake on the tender. On the above date I left Liverpool Street at 5.26 p.m., 23 minutes late, to run to Chelmsford. I have driven that train every third week for 10 or 11 years, and for a long time past the train has run over the down through road to Bow junction, and then on to the down local line. The fogmen were out everywhere, but I saw all signals on getting close to them. The fog varied a good deal at different spots, as it had done all day. When I got to Bethnal Green East junction the fog was not quite so thick, and I had a fairly good view of Devonshire Street distant signal, which was at danger; fog signals were on the line there and the fogman was showing a red light. At Devonshire Street home signal the fog was rather thicker, but I saw the signal, which was "off" for me. I only saw a green light, and no red light at all. I also saw the fog signalman, who was coming towards us showing a green light. I did not go over any detonators there so far as I know. After seeing the fogman and the signal I released the brake, which I had previously applied, and I gave the engine steam. When approaching the signal the speed would probably not exceed 10 miles an hour, but it would be higher than that by the time we got past the signal. In accordance with the rules for working Sykes' electric lock and block system, contained in the appendix to our working time tables, I consider that I ought to have been brought to a stand at the home signal before it was lowered for me, as I find I was reqnired to stop at the starting signal. I cannot specify any previous occasion when I have actually been brought to a stand at that signal, but there certainly have been some occasions. Just before I got to the starting signal I had shut off steam again. I had not applied the brake, as I did not think I was very close to the signal. The fog seemed to be much thicker there. As I went over the detonators I saw the distant signal at danger, but I did not see the starting signal although I knew there was one there. I drive from the right-hand side of the engine, and the home and starting signals at Globe Road (Devonshire Street box) are on my side of the line. The fogman was on the fireman's side at both places, and I could see him at the home signal, but not at the starting signal. The fireman was looking out, and he said "red light, mate," just as I caught sight of the distant signal. When there are starting or home signals on the same post as the distant, the rules say that on receiving a red hand signal I must bring my train to a stand. I admit I did not do so on this occasion, but I applied the brakes and reduced speed to some extent. I did not hear anyone shouting or trying to attract my attention in any way. I did not realise there was anything in front of me until I was five or six yards off the tail of the 5 o'clock train from Liverpool Street to Norwich. I was shaken a little by the collision, but not hurt otherwise. The leading and driving wheels of my engine left the rails to the right, but no other wheels of the train were off the rails. I was running chimney first. The speed was not more than seven or eight miles an hour when the collision took place.

*Harry Hughes* states: I have been 13 years in the Company's service, five years a fireman. I have been firing for driver Peachey for about 12 months, and on the 18th inst. my hours of duty were the same as his. At Devonshire Street home signal I saw the fogman on my side (left hand) of the engine. He was showing a green light. We did not explode any detonators there to my recollection. I did not see the semaphore signal. After passing the signal, steam—which had been previously shut off—was given to the engine. On getting near Devonshire Street starting signal I saw the fogman's red light on my side of the engine, and I told my driver. I am not quite sure whether steam had been shut off before, but I am certain it was then shut off. I was opposite to the fogman when I saw his signal, and he was holding it still in his hand, so far as I could see in the fog. My mate put on the brake directly. I could not see either of the semaphore signals, which were on the right-hand side. When the collision took place I was not hurt at all.

*Fred Ellis* states: I have been 22 years in the Company's service, nine years a driver. On the 18th inst. I came on duty at 7.50 a.m. to work until about 8.40 p.m., and we have that turn about one day a week. My engine, No. 1036, is a four-wheels-coupled tender engine. On the above date I left Liverpool Street at 5.23 p.m., 23 minutes late, to run to Norwich. Approaching Globe Road station, all signals, home, starting, and distant, were off for me, but I found Canal box home and distant signals at danger, and I brought my train to a stand at the home signal. Detonators were on the line, but I saw the home and distant signal lights. My mate saw the fog signalman. Passing Devonshire Street box I saw Canal box distant signal at danger, and detonators were exploded there as usual. As regards Devonshire Street box signals, if I pass the distant signal at danger I should not take the lowering of the home signal, whether I was stopped at it or not, to give me any indication that I should find the starting signal off for me. In ordinary weather we are not often checked at Devonshire Street at all. I suppose I stood at Canal box home signal about three minutes, when the signal was lowered for me and I started at once. The engine wheels had just moved, perhaps half a revolution, when the collision took place, and the engine broke away from the train and was driven forward about an engine's length. I had 80 or 85 lbs. pressure showing on the brake gauge at the time. My mate and I were both knocked down, but we were not injured. No wheels of the engine left the rails. I saw the starting signal at Devonshire Street box "off" when I was opposite to it.

*George Frederick Mole* states: I have been 22 years in the Company's service, and a passenger guard for nearly 13 years. On the 18th inst. I came on duty at 9.55 a.m. to work until 8.55 p.m. On the above date I left Liverpool Street at 5.23 p.m. There were 15 vehicles behind the engine, and I rode in brake van No. 724, which was the twelfth vehicle of the train. We were stopped at Canal box home signal for several minutes, and we were just on the move (I doubt if the wheels had actually gone round) when the collision took place. I was standing up moving a box, and I was knocked on to the floor and dislocated my shoulder. I have been off duty ever since. The train was divided between the eighth and ninth vehicles. No one was riding in the rear van, which was greatly damaged, and its trailing wheels were knocked off the rails. One pair of wheels of the ninth vehicle were also off the rails, and it was buffer-locked with the eighth vehicle.

*James Price* states: I have been 27 years in the Company's service, and a signalman in Devonshire Street signal box for 15 years. On the 18th inst. I came on duty at 2 p.m. to work until 10 p.m. The fogmen were out when I came on duty and remained out all the afternoon and evening. The 5 p.m. down train to Norwich was accepted by me at 5.25 and accepted by Canal box at 5.26, when I lowered my home, starting, and distant signals. The train passed my box at 5.27, and I noticed that Canal box distant, underneath my starting signal, was at danger. After I have lowered the starting signal I cannot quite put the lever back in the frame until the engine reaches a treadle in advance of the signal, and on seeing on my indicator the word "free," which showed that the engine had reached the treadle, I put my starting signal back to danger. A train cannot be offered to me from the cabin in rear, Bethnal Green East junction, until the engine of the preceding train has reached the treadle referred to above. The "be ready" was given me for the 5.3 down Chelmsford train at 5.28, and "on line" for the same train was given me at 5.29. It passed my cabin at 5.31. I did not lower any signals for the train until a bell in my cabin began to ring, which showed me that the train was on the rail contact outside my home signal. I probably could see a train in that position in clear weather, but I work to the bell signal and do not keep any look-out for the trains until they are approaching the cabin. The home signal is too far away from the cabin for me to be able to give a driver any warning of the starting signal being at danger, other than that the home signal is only lowered when the engine reaches the contact, and is therefore close to the signal. I heard the train pass and I went to the window. I can hardly say what the speed of the train was, but I do not think it would be so fast as that of a train with all signals "off" for it, and I think the train would not be going quite so fast as the train in front of it had done. My block instrument showed me that the preceding train was still in the section ahead. I also noticed the "slot" on the starting signal, and, on going to the window, I actually saw both starting and distant signals at danger. I could only just see them. I am quite certain that the fogman near my box had given some drivers that afternoon the information "starter off, distant at danger," as laid down in the rules, but I do not know whether this caution was given either to the 5 p.m. Norwich or 5.3 p.m. Chelmsford train. I whistled to try and attract the driver's attention as soon as I saw he was going to run past, but steam seemed to be blowing off at the time and I do not suppose he heard me.

*George Andrews* states: I have been 14 years in the Company's service, 12 years a signalman, and for 3½ years employed at the Canal box, Coborn Road. On the 18th inst. I came on duty at 2 p.m. to work until 10 p.m. It is a block box, but only trains starting from my box are booked by me, and in case trains are delayed I make an entry, if I can find time to do so. When Devonshire Street offered me the 5 p.m. train, ex Liverpool Street to Norwich and Yarmouth, I accepted it at once, but I took off no signals for it, as I could not offer it ahead, the section being occupied. The slot on Devonshire Street starting signal would be "off." When I knew that the train had arrived at my home signal, I slotted the starter, referred to above, and it remained "on" until after the accident happened. I believe the section ahead was cleared by Coborn Road at 5.31, and I immediately offered the Norwich train, and got it accepted, when I at once lowered my home signal. I have an advance signal, but no starting signal, near the cabin, and trains are not sent on to stand at the former in foggy weather. There was no delay whatever, on my part, in getting the train away.

*John Elsdon* states: I have been 11 years in the Company's service as a platelayer, and on the 18th inst. I went to the down through home signal, for Devonshire Street cabin, to act as fogman. When the Norwich train, 5 o'clock ex Liverpool Street, arrived, there were no detonators on the rails, as I had taken them off when the signal was lowered for the train. As soon as the train passed I placed the detonators on again, and the signal was duly placed at danger by the signalman. As the Chelmsford train approached, I was on the London side of my detonators. The signal was lowered before the train got to me. I had not had time to take the detonators off. I gave the driver a green signal, and let him go right away. The first detonator the engine passed over would be nearly 50 yards from the signal post, and the home signal was "off" before any detonator was exploded. I could just see the signal from where I stood, but I could not say whether the driver should have seen the semaphore signal being lowered for him, or any red light which was showing prior to the signal being lowered. The speed of the train did not strike me as being excessive in any way. I am absolutely certain the train exploded two detonators.

*Benjamin Firman* states: I have been 12 years in the Company's service, and I am now employed as foreman porter at Globe Road station. On the 18th inst. I came on duty at 4.15 a.m. to work until 2 p.m., ordinary hours. On this occasion I went at 2 p.m. as fogman for Devonshire Street down, through line, starting signal, and Canal box distant signal, which are on the same post. When the train, ex Liverpool Street for Norwich, arrived, the starter was "off," and the distant "on." The detonators were on the rail, and were exploded by the train. I was standing at the cabin nearly opposite the signal, and in front of the detonators; the driver very nearly stopped at the signals, and I told the fireman that the starter was "off," but the distant "on." I do not know whether the fireman heard me, or not, as he did not hold up his hand—which they usually do to acknowledge my caution. After the train passed, the signal was put to danger, and directly it passed I placed two detonators on the line, about 40 yards from the signal, and then I went back to the corner of the signal-box. I afterwards stepped across the down road to look at the signal, and when returning I heard the 5.3 ex Liverpool Street coming. I ran towards it with my red light, and I had just come to a stand when the first detonator was exploded. I could see that the train would not stop at my signal, so I shouted and whistled. I could not see the fireman, and I could not see whether steam was on or off. When the engine passed, I turned round and showed the red light ahead, still whistling—but I do not know whether any of the train-men saw or heard me.

## *Conclusion.*

This accident was clearly due to driver Peachey running past the starting signal at Globe Road station (Devonshire Street box) when at danger, in a thick fog. The main facts of the case are as follows:—Owing to the fog, the 5 p.m. train from Liverpool Street to Norwich did not leave until 5.23, and, after passing Globe Road station at 5.27, it came to a stand at the home-signal for Canal box, the section ahead being occupied by another train; as it stood there the tail end of the train was only about 150 yards past Devonshire Street box, but the engine had passed over the treadle which enables the Devonshire Street signalman to give "clear" to Bethnal Green East Junction (the next box in rear).

At 5.26 the 5.3 train to Chelmsford left Liverpool Street, also 23 minutes behind time, and at 5.28 this train was offered to the Devonshire Street signalman, from Bethnal Green East Junction, the former being then in a position to accept it as explained above; the train was given "on line" at 5.29, and it passed Devonshire Street box at 5.31, immediately afterwards coming into collision with the Norwich train, the driver of the latter having just opened his regulator, to give his engine steam, on the signal ahead being lowered for him to proceed.

Driver Peachey (5.3 p.m. train) states that after leaving Liverpool Street he found the fogmen everywhere at their posts, but he was able to see the semaphore signals, when close to them, at Bishopsgate and Bethnal Green. The fog is admitted by all to have been very variable from one minute to another, and it was not so very thick when the train arrived at Devonshire Street distant signal, which Peachey found at danger; at the home-signal it was worse again, but the fog-signalman on duty there (John Elsdon) says he could see the signal from where he stood, about 50 yards from the post. Elsdon says the detonators were still on the line, although the signal had just been lowered, as he had not had time to remove them, and that the train exploded both detonators when passing over them. The driver and fireman seem, however, to be almost equally certain they did not go over any detonators at this point. It is, I think, beyond doubt that the signal was off by the time the driver could see it, and that Elsdon was showing a green hand-signal to authorize the train to proceed, and therefore if the detonators were exploded the fact would not be any indication to Peachey that he must exercise special caution, for fogmen frequently leave detonators on the line when they are not required to be there.

In accordance with the regulation quoted above, the 5.3 train should have been brought to a stand at Devonshire Street home-signal, before it was admitted as far as the starting signal, the latter being at danger. Driver Peachey claims that he was justified in assuming the starting signal to be "off," as he was not stopped at the home-signal, and he would doubtless have gone forward much more cautiously had he received the warning which, under the rules, he ought to have had. At the same time "two wrongs do not make a right," and a driver is not relieved from the obligation to exercise reasonable care in approaching a fixed signal, at which he may have to stop, because the previous indication given to him was incorrect and pointed to the probability of the line ahead being clear. I do not see how the traffic on a railway can be safely carried on in foggy weather unless drivers have their trains always under sufficient control to enable them to obey any signal that may be exhibited.

When the 5.3 train arrived at Devonshire Street starting signal, which was at danger as already stated, driver Peachey saw Canal box distant signal underneath the starting signal at danger, but he says he could not see the latter, the fog being then very dense; at the same moment his fireman saw the fog-signalman giving a red, or danger, hand signal, and he informed Peachey of the fact. The latter apparently *assumed* that the hand signal was only exhibited for the purpose of repeating the distant signal, but the rule says " he must be satisfied " such is the case, and as he had not seen the starting signal off he should at once have brought his train to a stand, which he failed to do. He says he applied the brakes, and reduced speed to some extent, before the collision with the 5 o'clock train took place, 147 yards ahead of the signal.

Driver Peachey bears an excellent character, and I am informed he had a reward for saving a collision three years ago, so that I greatly regret having to record my opinion that he did not in this instance exercise proper care in handling his train—making the fullest allowance for the misleading signal given him as he approached the home-signal.

It has at various times been pointed out by the Board of Trade Inspecting Officers that nothing is worse for discipline than a rule the breach of which is tacitly allowed, and I am afraid the rule in reference to bringing through trains to a stand at the down home-signal, before drawing forward to the starting signal when the latter is at danger, has been allowed to be almost a dead letter at Globe Road. This occurrence shows that, in foggy weather at any rate, it is very necessary to carry out the rule most strictly, and such alterations should be made in the present arrangements as will ensure the drivers getting proper information in future.

The Great Eastern Railway have adopted the Clearing House rules in regard to fog signalling and detonating signals, which have been drawn up after much consideration and as the result of varied experience. It will be noticed that when there is a distant signal on a home or starting signal post, the detonating signal remains the same whether both semaphore signals or only the distant signal be at danger, and the fogman shows a red light in either case. I think the accident under consideration points to the desirability of making the instructions to the driver, how he is to act on the explosion of a detonator, more precise, either by having the train invariably brought to a stand when a red hand signal is shown, or, at least, by adding to the present rule words which will clearly tell the driver he must be " satisfied " only when he has actually seen the home or starting signal " off," as the case may be.

Another matter of considerable importance remains to be dealt with. In ordinary block working, the signalman must see that the preceding train has passed at least a quarter of a mile beyond the home signal, and that it is *continuing its journey*, before he gives permission for a following train to leave the box in rear. Where the signal box in advance is less than a quarter of a mile ahead, permission for a train to approach must not be given to the box in the rear until the " Train out of section " signal has been received from the box in advance. In the electric lock and block system of working, the train itself is made use of to intimate when the following train may be permitted to enter the section it has just left, which, as described above, is effected by passing over a rail contact, and so electrically releasing the apparatus and starting signal of the section in rear, which had been " locked " after the first train had entered that section. I understand that it is the practice of the Great Eastern Railway Company to place the electric treadles about 300 yards beyond the starting signals, which is probably quite sufficient where the boxes are, say, not less than half a mile apart, to ensure a reasonable interval between following trains. I do not, however, consider that proper clearance is obtained by merely placing a treadle 160, or even 300, yards ahead of the starting signal, where, in consequence of a short section, the train is liable to be brought to a stand with its tail end only 100 to 150 yards clear of the signal after the engine has passed over the treadle. This is the case at Globe Road, so far as the down through line is concerned, and some alteration seems to me to be very desirable.

I have, &c.,
G. W. Addison,
*Lieut.-Col., R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

## APPENDIX.

### Statement of Damage to Rolling-stock.

Engine No. 754.—Leading buffer-beam bent; buffers broken; Westinghouse pipe broken; lamp-irons broken off; flap-plate over cylinders bent; plates in front of steam-chest broken; one cylinder-cock broken off; left-hand leading spring hanger broken, and one bent; spring pillars bent; foot-plate, left-hand side, broken; outside frame, right-hand side, cracked six and a half inches near leading horn block. Guard-irons and chimney broken off.

### 5.3 p.m. Train ex Liverpool Street.

Second-class carriage No. 474.—Two buffers bent.

Second-class carriage No. 29.—One step-board broken; one corner pillar facia broken; four end mouldings broken.

Composite carriage No. 6.—One Westinghouse end-bend broken; one pipe-hook broken; two bottom sides broken; ten end framings broken; two corner pillars broken; seven end panels broken; one end bar facia broken; two end quarter panels broken; one arch rail facia broken; two brass corner-plates broken; one end gas-pipe broken; two standing pillars broken; one first-class seat frame broken; fourteen casings broken; one end bar broken; three buffers bent.

### 5.0 p.m. Train ex Liverpool Street.

First-class carriage No. 223.—Two buffers bent.

Brake-van No. 387.—Destroyed.

Third-class carriage No. 709.—Two buffers and one ascending tread bent.

Composite carriage No. 256.—Ten end framings broken; one arch-rail broken; seven end pieces broken; one arch-rail facia broken; one corner pillar broken; fifteen casings broken; one photo-glass broken; one seat-frame broken; two corner pillar-facias broken; two side cornices broken; one buffer bent; one commode bent.

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Printed copies of the above Report were sent to the Company on the 17th January, 1898.

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## GREAT NORTHERN RAILWAY.

Board of Trade (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.,
September 29th, 1897.

Sir,

I have the honour to report for the information of the Board of Trade, in compliance with the order of the 17th inst., the result of my enquiry into the circumstances attending a collision which occurred on the 13th inst., at Ardsley, on the Great Northern Railway.

In this case, the 5.7 p.m. passenger train from Leeds to Wakefield, when approaching Ardsley station, overtook and came into collision, at 5.20 p.m., with the rear of a goods train from Halifax and Bradford to Ardsley.

The goods train consisted of a six-wheels-coupled tank engine, five loaded waggons, 19 empty waggons and three brake vans; the passenger train consisting of engine and tender and four vehicles, fitted throughout with the automatic vacuum brake. The leading wheels of the rear brake van of the former train left the rails. The damage to the rolling stock, details of which are given in an appendix, was limited to the brake van and three waggons. Two passengers are reported to have complained of injury.

### *Description.*

This collision occurred between Middleton Wood and Ardsley north signal cabins, and the up main line, on which the two trains were running, is on a gradient rising towards Ardsley at one in 100 throughout. The distance between the two cabins is one mile 140 yards.

At Ardsley north cabin the up line diverges, through the station, into two lines—viz.: up main and up slow—with two home signals, upon a bracket post, about 125 yards north of the cabin, and two distant signals, similarly arranged, 513 yards north of the cabin. A short distance still further north, 620 yards from the cabin, is the south end of Ardsley tunnel. The up line through the tunnel is on a curve to the left of 46 chains radius, which changes immediately after passing the distant signals, above referred to, into a very gentle curve to the right of 200 chains radius.

The next cabin on the up or south side of Ardsley north cabin is known as Ardsley Yard cabin, and there are separate block instruments and bells for the up main and up slow lines between those cabins, although absolute block working is only in force on the main line. Between Ardsley North and Middleton Wood cabins absolute block working is in force. The circumstances under which the passenger train was sent forward from Middleton Wood while the section was still occupied by the goods train are fully described in the evidence.

The following extracts from the Great Northern Railway's " General Regulations for Working the Absolute Block Telegraph " bear upon this case, viz. :

" *Each signal must, on receipt or despatch, be entered in the train register book in ink. Erasures or alterations are forbidden. If a wrong entry be made the pen must be drawn lightly through it, and the correct words or figures written above.*"

BELL SIGNALS.

" *Call attention, one beat on bell.*

" *Cancelling 'Is Line Clear' or 'Train Entering Section' signal, eight beats on bell—to be given three, pause, five.*

" *Shunt train for following train to pass, 11 beats on bell—to be given one, pause, five, pause, five.*

" *1. Except where special instructions are issued to the contrary, the 'Call Attention' signal must always be given before any other signal, and must be repeated immediately.*

" *18. Should it be necessary to cancel the 'Is Line Clear' or 'Train Entering Section' signal, the cancelling signal must be forwarded, and the signalman receiving the signal must, after acknowledging it, place or maintain the block indicator in its normal position, and an entry must be made in the train register book recording the fact of the signal having been cancelled. The 'Cancelling' signal must not be used unless the 'Is Line Clear' or 'Train Entering Section' signal has been acknowledged or accepted. This signal must only be used in cases where a train has been signalled to the signal-box in advance, and it is found that such train will not proceed in the usual course. No signal must be considered cancelled except with the consent of the men at both boxes, and before any train is allowed to proceed the usual signals must be exchanged and accepted.*

" *21. When, before the 'Train Out of Section' signal has been received from the signal-box in advance, for the last train, the signalman receives a signal from the box in rear for a more important train, the 'Shunt' signal must be sent to the signal-box in advance, and the signalman there, on receiving this signal, must take the necessary measures to clear the line so as to prevent delay to the second train. . . . . . The signalmen forwarding and receiving the 'Shunt' signal must make a note of it in their train register books.*"

## *Evidence.*

*Henry Smith* states : I have been 25 years in the Company's service, 15 years a driver. On the 13th September I came on duty at 1.40 p.m. to work until about 12.30 a.m. on the 14th. My engine, No. 107, is a four-wheels-coupled, tender, engine, fitted with the vacuum automatic brake, and a tender hand brake. On the above date I left Leeds at 5.8 p.m. (1 minute late) to run to Wakefield, with four passenger vehicles behind the engine. We stopped at Holbeck, and the next booked stop was Ardsley. Approaching Middleton Wood signal cabin, I found all signals at danger, but the home signal was pulled off for me when I was about midway between the distant and home signals. I passed the cabin at a speed of about 30 miles an hour. The distant signals of Ardsley North box are just outside the Ardsley end of the tunnel. The end of the tunnel and the cutting outside it were full of smoke and steam, and I could not see the signals until I was close on to them—they were at danger. I had not then shut off steam. I drive from the right-hand side of the engine. Looking ahead, I suddenly saw a goods train in front of me. I shut the regulator, put the brake on, and reversed the engine ; which I had just done when we came into collision with the brake van of the goods train. My brakes seemed to act all right. Neither I nor my mate was hurt at all. We had reduced speed a little before the collision took place. None of the wheels of my engine or of the carriages left the rails.

*William Townsend* states : I have been five years in the Company's service, and a brakesman for three years. On the 13th September I came on duty at 5.45 a.m. as relief brakesman, to work as required. I did not get off duty until 8.30 p.m., being delayed by the accident, otherwise I should have gone back to Bradford (as a passenger) by the 5.30 train from Ardsley. I left Bradford goods station at 3.35 p.m., to run to Ardsley. The train is booked to leave Bradford at 12.30, but it had arrived from Halifax about three hours late, and I relieved the proper guard of the train at the former place. On leaving Bradford, the train consisted of five loaded waggons, 19 empty waggons, and three brake vans. I rode in the van at the rear of the train. At Bramley we were stopped for 25 minutes, mainly in consequence of a goods train being in front of us. We ran past Middleton signal cabin without stopping. We had run a bit slowly all the way owing to some failure of the engine. Just as we got out of the tunnel near Ardsley, I heard another train following us in the tunnel—the tunnel was very full of smoke at the time. Nothing had passed us in the tunnel on the other line so far as I know. The speed coming out of the tunnel would, probably, be seven miles an hour. I saw the engine of the passenger train coming out of the tunnel ; I opened my van door and jumped down. I was then a few yards past the catch points. I had no time to do anything.

*Charles William Armstrong* states: I have been 14½ years in the Company's service and a driver for 10 months. On the 13th September I came on duty at 6 a.m. to work until 6 p.m., with one hour off for meals. The engine I was driving on that date is No. 860, a six-wheels-coupled tank engine, fitted with the automatic vacuum brake. I am a spare man in the shed, and I relieved the regular train driver at Bradford; I was told by the latter that the boiler was leaking very badly. The engine is stabled at Ardsley, and the water there is bad, but a fresh supply is now being laid on. I left Bradford at 3.35. We were stopped for some time at Bramley, waiting for signals. Between Wortley and Ardsley North, on the rising gradient, the fire was constantly damped owing to the leakage, and the speed would not exceed eight miles an hour. Approaching Middleton, all signals were off for me, including the distant signal; Ardsley North distant signals were at danger, but the home signal for the slow road (the left-hand signal) was off. I had a good view of the distant signals, although the mouth of the tunnel was rather thick, and I am quite sure they were at danger. I knew nothing of the train behind me until the collision occurred, which I felt a little, and my engine was driven forward a few engine lengths. I should see Ardsley North home signals very soon after seeing the distant signals. The slow road arm was then "off." I drive from the right-hand side of the engine.

*John Thomas Smith* states: I have been about five years in the Company's service, and a signalman for two years. Since August 6th I have been employed in Middleton Wood signal cabin. On the 13th instant I came on duty at 12 noon to work until 10 p.m. At 4.57 p.m., Beeston junction gave me the "be ready" signal for an up goods train, which I accepted at once; the train was given me "on line" at 5.8, and it passed the cabin at 5.14. I had lowered both my home and distant signals. I gave "be ready" for this train to Ardsley North at 5.8, which was accepted at once, and I gave "train entering section" at 5.14. At 5.14 I also gave the "train out of section" signal back to Beeston junction, and I accepted at the same time the 5.7 passenger train ex Leeds. I did not then lower the signals for the latter train. The passenger train was given me "on line" at 5.18, when I called the attention of Ardsley North and gave him 11 bells (shunt signal) so as to get the goods off the passenger line. He acknowledged the signal, and as soon as he had done so he gave two beats to the right on the needle—which I repeated—indicating to me that the preceding train was "out of section." The North signalman gave me finally one beat on the needle. The needle was then vertical. I called his attention and gave three pause one bells, which signal was repeated and needle pegged to "line clear" at 5.18. I lowered my signals for the passenger, and it passed my cabin at 5.19.

The following trains passed on the down line about this time:—

| | Accepted. | Passed cabin. |
|---|---|---|
| L. and Y. passenger ... ... | 4.56 | 5.3 p.m. |
| Light engine ... ... ... | 5.3 | 5.6 „ |
| Great Northern express ... | 5.11 | 5.19 „ |

When at 5.19 I called up the signalman in the North cabin to give the up passenger train "on line," the latter turned the needle from "line clear" to "train entering section" without repeating the call signal. I called his attention again and it was still not repeated, so I gave the two bells for "train entering section," but they were not repeated. I went to the single needle instrument to ask him what he was doing, but I could not get his attention. About 5.20 he called me up and said "passenger running into goods, I thought you gave me the cancelling signal." I told him "no, it was the shunt signal." The cancelling signal is eight bells, viz.: three pause five, and the shunt signal is 11 bells, viz.: one pause five pause five. I have given the North signalman the shunt signal previously, but not the cancelling signal.

*Edward Weldon* states: I have been between five and six years in the Company's service, five years a signalman. I have been employed in the north cabin at Ardsley since January 1st, prior to which I was for two years in Middleton Wood cabin. On the 13th September I came on duty at 12 noon, to work until 10 p.m. On the above date I received the "be ready" signal from Middleton for an up goods train at 5.12, I accepted it at once, and I received the "train entering section" signal at 5.15. At 5.17 Middleton gave three, pause, five (cancelling signal) on the bell, which I repeated; he had just given me "out of section" for the down express, and did not give a fresh "call attention" signal before sending the cancelling signal for the up train. I have neither had the cancelling signal from Middleton previously, nor have I ever given it to Ardsley North from Middleton when working in the latter cabin. The "shunt" signal is not at all an uncommon one at the North box. Before I received the cancelling signal referred to above I had lowered my home signal for the slow line, and I then put it back to "danger;" I had taken off the signal as soon as I got "line clear" from the station box, at 5.15. As regards down trains, my book shows the following transactions with Middleton cabin:—

| | Offered to Middleton Wood. | Train entering Section Signal sent forward. |
|---|---|---|
| L. and Y. passenger ... | 4.55 | 5.1 |
| Light engine ... ... | 5.2 | 5.2 |
| Great Northern Express ... | 5.11 | 5.16 |

At 5.17, Middleton gave me "train out of section" for the down express. After getting the cancelling signal for the up goods I unpegged my needle, and he acknowledged it; as I was leaving my instrument I had the "call attention" signal and three pause one on the bell, which I acknowledged and pegged the needle to line clear at 5. 17. The passenger train was given me "on line" at 5.18. I offered "is line clear" to the station box, and after getting the necessary acknowledgment from the latter, I was about to lower the main line distant signal (the home being off) when I saw the goods train coming out of the tunnel. I reversed my signal, set the points and lowered the home signal for the goods train to go into the slow road. I went to the instrument to ask the Middleton man what he gave the cancelling signal for, he said he did not give it and I said he did. I had got "line clear" from the station box for the goods train at 5.15, on the slow line, which I did not afterwards cancel, being busy, and at 5.18, as stated above, I offered "is line clear" for the main line. It is a common practice in my experience after having given the "call attention" signal, to then go on to deal with more than one train without a fresh "call attention" signal where there is no break in the transactions.

*Walter Riseley* states: I have been about two months in the Company's service, and I am employed as train booker in Ardsley Yard cabin.

I am 16 years of age. On September 13th I came on duty at 2 p.m. to work until 10 p.m. I make all the entries in the block book. I generally look out for myself, but the signalman tells me if necessary what entries to make. After 5 p.m., the first train offered to us by Ardsley North was a passenger train, at 5.14, on the fast line. This was cancelled at 5.20, and a goods train offered on the slow road.

*Alfred Lupton May* states: I have been 14 years in the Company's service, a signalman all the time, and previously for 10 years with the North-Eastern. I have been for some years in the west, south, and station cabins at Ardsley, but not at all in the north cabin. On the 13th September I came on duty at 2 p.m. to work until 10 p.m. We have separate instruments and bells for the slow and fast lines between the yard cabin and the north cabin. I have not the slightest doubt that the passenger train was first signalled to us, and that only after it had been cancelled the goods train was offered to us. I had got the passenger train accepted by the south box at 5.14, and I cancelled it about 5.20 (the actual time is not booked, I find).

## *Conclusion.*

The collision occurred under the following circumstances :—

The signalman in Middleton Wood cabin received the "train entering section" signal from the cabin in the rear (Beeston Junction), for an up goods train, at 5.8 p.m. ; he says he then called the attention of the man in Ardsley North cabin, and that the latter at once accepted the train and pegged the block indicator to the "line clear" position, in accordance with the block regulations. At 5.14 the goods train passed Middleton Wood, the "train entering section" signal being sent on to Ardsley North and duly acknowledged.

It then became the duty of signalman Weldon, in the North cabin, to obtain the "line clear" signal from the cabin in advance of him, viz. : Ardsley Yard cabin—and he says he got that signal at 5.15. It appears, however, from the evidence of the signalman and of the train booker in the latter cabin, that the only train offered to, and accepted by, them about this time (5.14 according to their book) was a passenger train on the main line, and not, as Weldon states, a goods train on the slow line. There are, as described above, separate block instruments for the two lines between those cabins, and it is hardly possible they can be mistaken on the point at issue. Moreover, as will be seen later on, this is not the only instance in which they directly contradict Weldon's evidence.

I may add that Weldon's train register book shows 5.12 as the time at which the "line clear" signal was given by him to Middleton Wood, for the goods train, instead of 5.8, as stated by the latter signalman. If he omitted, in forgetfulness or otherwise, to make the necessary entry in his book at the time, much that occurred afterwards is capable of explanation ; for example, when the train was given him as "entering section" at 5.14, he may then have thought it was a passenger train, in which case he would advise Ardsley Yard to that effect, as they say he actually did. The train register book, which was produced at my enquiry, showed indications of some erasure or alteration of the original entry in reference to the goods train, and I am afraid its accuracy cannot be relied on.

When the goods train had passed Middleton Wood, and the "train out of section" signal had been given to Beeston Junction, the latter offered the former the 5.7 up passenger train *ex* Leeds, which was accepted, at 5.14 p.m. At 5.18 Middleton Wood received the "train entering section" signal for that train, before the "train out of section" signal had been received from the cabin in advance (Ardsley North) for the goods train ; and in accordance with Rule 21 quoted above the shunt signal—1 pause 5 pause 5—is stated to have been forwarded and acknowledged. Signalman Weldon, however, says the signal he received and acknowledged was the cancelling—3 pause 5—and not the shunt signal ; he further says that he unpegged the needle of the block instrument, while signalman Smith, at Middleton Wood, says that before the needle was restored to the vertical position, he received the usual dial signal (two beats to the right) to indicate "train out of section." That Weldon was by this time completely "fogged," may, I think, be regarded as certain, for he admits that the cancelling signal is never used in the section between Middleton Wood and Ardsley North, and that he took no steps to send that signal on to the Yard cabin, as he should have done if he really believed he had received it and if his story is correct. After this, Weldon gave "line clear" to Middleton Wood for the passenger train, and at 5.18 or 5.19 he received the "train entering section" signal for it ; in dealing with the latter signal certain irregularities are alleged, and the man at Middleton Wood says he tried to get Weldon's attention to find out what was the matter. Weldon then professes to have offered the "is line clear" signal to the Yard cabin, for the passenger train on the main line—*i.e.*, at about 5.18—but the men there declare that what actually happened was that Weldon, at 5.20, cancelled the passenger train he had given them at 5.14 and offered them the goods train on the slow line. The strong probability of this version of the case being the true one is apparent, when it is recollected that at 5.20 Weldon saw the goods train coming out of the tunnel.

His statements are thus contradicted on vital points by the men in the cabins on either side of his cabin, and he must be held to be solely responsible for the misunderstanding which led to the passenger train being allowed to enter the section, at Middleton Wood, before the goods train had cleared it. He is given a good character, and it would almost seem that he must have been from some cause or other unfit for work at the time ; he had only been on duty a little over five hours, and the station master, who saw him immediately after the occurrence, is of opinion that he was "then in a capable and fit state for the performance of his duty."

As stated above, the goods train passed Middleton Wood at 5.14, and it was only at about 5.20 that it cleared the tunnel north of Ardsley station, having thus taken six minutes to run a distance of about three-quarters of a mile (on a gradient rising at one in 100 towards Ardsley). The tail of the train was only about 160 yards outside the tunnel when the engine of the passenger train, which had passed Middleton Wood at 5.18, overtook and came into collision with it. The guard of the goods train fortunately saw the approach of the passenger train in sufficient time to jump out of his van before the collision occurred.

The goods train appears to have left Bradford three hours late, further time being lost between Bradford and Ardsley, and it was sent forward with an engine which was in a defective condition—a state of things that cannot be regarded as at all satisfactory.

The enginemen of the passenger train are not to blame in any way, for the mouth of the tunnel would naturally be full of smoke and steam at the time and they would have no view ahead until they were close on to the train in front of them.

I have, &c.,
G. W. ADDISON,
*Lieut.-Col.*, *R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

## APPENDIX.

### DAMAGE TO ROLLING STOCK.

Great Northern Railway, open goods waggon No. 21,524.—End post, two end boards, buffer head and rams.

Great Northern Railway, open goods waggon No. 178.—Two headstocks, three end posts, four end boards, buffer ram, axle guard box, brake block, and brass on journal end.

Great Northern Railway, open goods waggon No. 14,239.—Drawbar eye and buffer rams.

Great Northern Railway, goods brake No. 13,181.—Two headstocks, two buffer castings, four cushions, headstock corner plates, buffer rams, two end posts, one diagonal, flange of wheel, and body shifted.

Printed copies of the above Report were sent to the Company on the 15th October.

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## GREAT NORTHERN RAILWAY.

Board of Trade (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.,
October 16th, 1897.

SIR,

I HAVE the honour to report for the information of the Board of Trade, in compliance with the Order of the 2nd instant, the result of my enquiry into the causes of the collision which occurred at 8.22 p.m. on the 23rd September, at Marshgate Junction, Doncaster, on the Great Northern Railway.

In this case, as the 8.20 p.m. Lancashire and Yorkshire passenger train, from Doncaster to Knottingley, was leaving the former station it ran into engine No. 485, with one wagon attached, standing on the down main line about 80 yards north of Frenchgate signal cabin.

Five passengers have complained of injury, and the driver and fireman of the Lancashire and Yorkshire train were also injured, the latter only very slightly.

The passenger train consisted of an eight-wheeled tank engine (four coupled wheels and a trailing bogie) and five vehicles, and it was fitted throughout with the automatic vacuum brake. The left-hand buffer spindle of the engine was broken, and also the draw bar hook of the first vehicle, causing the engine to break loose from the train.

Engine No. 485 was in no way injured, but the wagon behind it had both headstocks damaged. The wagon contained cattle, which were, fortunately, 'uninjured. This engine had brought a Great Central goods train from Sheffield, and had drawn forward out of the station (Doncaster) yard for the purpose of placing the wagon in the cattle dock. The driver had just opened the regulator to give his engine steam when the collision occurred, and the engine and wagon were driven forward about 200 yards.

## *Description.*

This collision took place nearly midway between Frenchgate and Marshgate Junction signal cabins, at the north end of Doncaster station yard. The distance between the two cabins being only 180 yards.

Marshgate is the junction of three important lines, viz., from Doncaster to Leeds, York and Hull respectively; and the junction down home signals are situated 55 yards south of Marshgate cabin and 125 yards north of Frenchgate cabin, these signals being also controlled by a lever in the latter cabin. The only other signal which need be referred to is Frenchgate cabin down home signal from the local passenger line, on the west side of Doncaster station, which is 145 yards south of the cabin.

The local, or western platform, line joins the down main line a few yards south of Frenchgate cabin; the former line curving to the right and then to the left, approaching the cabin, the main line being straight. It would be possible for the driver of a train coming out of the western platform to see the tail light of anything standing where the cattle wagon was in sufficient time to stop before reaching it.

On the west side of the railway, in addition to the platform line above referred to, there are goods lines known as the South Yorkshire goods lines, and on the east side of the railway there are sidings and a cattle dock; a through road from the down main line gives access to the cattle dock, the trailing points of which, on the down line, are about 60 yards north of Frenchgate cabin. The cattle wagon had been drawn out from the South Yorkshire goods line on to the main line, over these points, preparatory to going into the cattle dock.

Just ahead, *i.e.*, north of, Marshgate Junction home signals, there is a cross-over road between the up and down main lines.

It may be added that Frenchgate cabin is on the up, or east, side of the railway, and that there is a very busy level crossing over the railway immediately north of the cabin. Absolute block working is not in force between the cabins referred to above, exemption from the general order made by the Board of Trade, under the Regulation of Railways Act, 1889, having been granted through the yard at Doncaster. For the down line working from Frenchgate to Marshgate each of those cabins is provided with three bells, so that the former may indicate to the latter whether a train is for the Leeds, York or Hull line respectively. There is only one dial instrument, and instead of the usual indications of "Line clear" and "Train entering section" being shown on it, the needle movements show "Line clear" and "Line occupied."

The following extracts from the printed instructions for the mode of working adopted in this case may be quoted :—

> "'*Line clear*' *indicates that no obstruction exists on the line between the two signal boxes.*"
>
> "'*Line occupied*' *indicates that an obstruction exists in the section in advance of the signalman* "*who tenders* '*Is line clear.*' *When* '*Line occupied*' *is received in reply to* '*Is line clear?*' *the signalman* "*tendering* '*Is line clear?*' *must keep the signals which govern the line at danger until the train has* "*been stopped at the home signal. He must then show a caution signal by green flag or hand lamp,* "*waving the signal slowly from side to side, take off the home signal, and, when such is practicable,* "*verbally instruct the engineman to proceed cautiously.*"

## *Evidence.*

*William Skelton* states : I have been 14 years in the Great Northern Railway Company's service—a signalman 13 years, and since July 26th, 1897 I have been employed in Frenchgate cabin, Doncaster. On September 23rd I came on duty at 2 p.m. to work until 8 p.m. A Great Central goods train from Sheffield arrived on the South Yorks down goods line at 8.8. The "C" cabin signalman (the next cabin to me on those lines) told me there was a wagon, with cattle, on the train for the cattle dock. At about 8.17 I lowered the South Yorks starting signal, and at 8.19 the engine (No. 485), with one wagon attached, passed my cabin. I noticed that the train had a tail light, showing a good red light. When I lowered my signal for that train I expected to be able to set the points for the through road to the cattle dock without any delay, but an up coal train (Great Northern) which I had taken my signals off for at 8.16 did not pass my cabin until 8.22. When engine No. 485 passed my cabin I had not pulled over my advance signal lever. At 8.20 I gave the Marshgate Junction signalman three beats on the West Riding line bell—there is only one block instrument for the down line, and special rules are authorized for the working between my cabin and Marshgate Junction. He acknowledged the signals in the usual way, giving me "Line clear." I told him on the speaking instrument to send the engine, etc., clear, which he would understand to mean that it was to be sent on to the Leeds line clear of Marshgate Junction ; he gave me the usual reply to intimate he understood. I pulled off the slot lever controlling the advance signals. Engine No. 485 had come to a stand with the rear of the cattle truck beyond the through road points, and in that position I could not see the tail-light in consequence of the gateman's cabin obstructing my view. After pulling off my slot lever I noticed that Marshgate Junction lowered the signal for the West Riding line, and I am sure this was done before I let the passenger train out of the station. It was a very clear night—it was dark at the time. At 8.20 "B" cabin offered me the 8.20 Lancashire and Yorkshire passenger train from Doncaster to Knottingley. I accepted it, but did not then release No. 12 signal (my home signal) for the western platform line. The train was given me "on line" at 8.20, and I lowered the signal at 8.22, after having signalled the train on the bell to Marshgate Junction. The signalman in the latter cabin had replied to my signal by giving me "Line occupied." As the Lancashire and Yorkshire train came forward on to the down line I exhibited a green light, waving it to and fro until the engine was 10 or 15 yards away from the cabin, when I placed the lamp on a stand in the window. Generally we get some acknowledgment from the driver, but not in all cases ; in the dark it will generally be by a short whistle. In this case I do not think he did acknowledge the caution signal. Just after passing my cabin, when the engine was probably on the level crossing, I heard a pop on the whistle, which I took to be the driver's acknowledgment of the signal ahead having been lowered for him. I then noticed that the Leeds line and not the York line signal was off, and at the same moment almost the collision occurred. If I had known that engine 485 was standing at the signals immediately ahead of me I should still have let the passenger train come forward. This I am allowed to do under the rules. I occasionally bring passenger trains forward while the section between Frenchgate and Marshgate cabins is occupied, although probably not often, and the same remarks would apply to sending engine 485 forward on to the down Leeds road to get it out of the way. As near as I can say, when the Lancashire and Yorkshire passenger engine passed the cabin, the brake van of the up goods would be passing. I could not have given a verbal caution to the Lancashire and Yorkshire driver. If I had known when engine 485 came out that it would have to go on to the Leeds line, I should not have let it out without being able to tell the driver what he was to do. The guard with the Great Central engine came outside my cabin and said he had cattle for the dock. I called out to him "All right, I believe you will have to go ahead," but I am not sure whether he heard me.

*John Rippon* states : I have been 19 years a signalman in the Great Northern Railway Company's service. On September 23rd I came on duty at 2 p.m. to work until 10 p.m. in Marshgate Junction cabin. When the signalman in Frenchgate cabin gave me the bell signal, "Is line clear?" for the Great Central engine, etc., I acknowledged it, and was then told on the speaking instrument to send the engine clear of the junction. The bell signal had been given for the Leeds line. My junction points were at the time set for the Leeds line, and I pulled off my home signal, which I saw came off all right. I saw the engine standing near the semaphore signal before I got the bell signal. The driver did not move when I lowered the semaphore arm, so I put it on and pulled it off two or three times to try and attract his attention. Leaving it off, I got my hand lamp and waved it about inside the cabin, the window being shut, but the driver took no notice. At 8.21 my attention was called on the down York line bell, by the Frenchgate signalman. Three-pause-one signal, was given me, and I replied by "line occupied," and at the same time the "train entering section" signal was given me. The latter is generally given me when the train leaves the station, I think. It frequently happens that the "train entering section" signal is given me for a passenger train when I have given "line occupied," and not "line clear." I went back again to the Leeds line signal lever and pulled it up and down several times, having the lamp out of the window at the south end of the cabin. I do not think the driver had given the engine steam before I heard the shock of the collision. I never heard the Great Central driver whistle, but he might have done so. In cases of emergency, to clear the road for passenger trains, it is not uncommon to move a light engine, or an engine with coaches, on to the Leeds line. If the engine had gone forward on to the Leeds line it must have come back, in the wrong direction, past my cabin. Beyond that point I cannot say how it would have been dealt with. I have heard the Frenchgate signalmen give a driver instructions that he was to draw ahead beyond my home signals.

*William Hackett* states : I have been 24 years in the Great Central Railway Company's service, and a driver 12 years. On September 23rd I came on duty at 3.50 p.m. to work until about 3.30, booked time, but I seldom get off duty then. It is generally 4.30, or 5, or even 6 o'clock, before I get away, *i.e.*, 13 to 14 hours on duty. My engine, No. 485, is a six-wheels-coupled goods engine with a six-wheeled tender, fitted with the vacuum brake, working blocks on all wheels. On arrival at Doncaster on the above date, from Sheffield, I told the shunter at "C" box that I had a wagon of cattle for Doncaster—which was next the engine. We drew up to Frenchgate home signal on the goods line. Guard Dalton unhooked us from the train, the signal was pulled off and I ran forward to Frenchgate ; guard Dalton rode on the engine as far as the level crossing. I drive from the right-hand side of the engine. I got a signal from the guard to stop, when the wagon was clear of the points leading to the cattle dock. The three signals in front of me were then at danger. I saw the guard on his way to the cabin and he did not take with him the lamp which I had seen in his hand. After the guard had had some conversation with the signalman he went away and did not come back to us. There is a disc on the outside of the down line. for going across into the up sidings, and my mate was looking back, watching it. I was looking at Frenchgate signal box, to see if the man there had any signal to give me to go forward—as is my custom. I have worked goods trains through Doncaster two weeks in five for some years, and I do not recollect having ever been sent forward on to the down Leeds road to clear the down main. I did not look round to see if the signal ahead had been lowered or not, nor did I look towards Marshgate cabin. I heard something coming towards us on the down road. I could not see anything, but the train seemed to be getting nearer so I opened the regulator, to get my engine out of the way, and I had just opened it, I think, when we were struck. My elbow was bruised, but my mate was not hurt (he was standing at the time on the outside framing holding on to the hand brake). I did not expect my fireman to keep any look-out ahead for me. After the collision my engine came to a stand on the clearance bar on the West Riding or Leeds line.

*Isaac Dalton* states : I have been 13 years in the Great Central Railway Company's service, and a goods guard seven years. On the 23rd September I came on duty at 4.25 p.m., to work until 1.35 a.m. on the 24th, booked time ; but it is generally about 4 a.m. or 4.30 before I get away. While at a stand at Frenchgate home signal (Doncaster) I unhooked the cattle wagon from the rest of the train, the signal ahead was lowered, and we went forward. I rode on the engine. I did not notice the signalman. I got off when we got clear of the points for the cattle siding. I then put my hand-lamp behind the cattle wagon, with a red light showing towards the rear. I went to the signalman and told him, from outside the cabin, that I had a wagon for the cattle siding. He said "All right, I will turn you across in a minute." I did not go back to my driver, but I went a few yards down the cattle siding, to see if we could get into the sidings without going along the up line to "A" box. To do the latter operation we should have to go through the main line cross-over road ahead of Marshgate Junction home signals. In that case I should have given my driver fresh verbal instructions of what he was to do before he moved ahead. I never recollect having been shunted on to the down Leeds road to clear the down main, nor do I remember a passenger train being let out of the station while I was with anything standing on the down line just ahead of Frenchgate signal box. I did not see the passenger train come out of the station on this occasion. I heard the collision and I went down to my engine at once. I did not notice the signals as I passed. I had no conversation with the driver or signalmen as to the cause of the accident. I could see the light on my wagon well, from where I stood on the ballast under the signal box. After the collision I found my lamp on the ballast, a few yards ahead of where I had left the cattle wagon. The light was out, and a piece had been knocked off the lamp. The Great Northern gateman saw the lamp in my hand when I went to his cabin to re-light it.

*Joseph Jackson* states : I have been 17 years in the Lancashire and Yorkshire Company's service, seven years a passed driver. For three years I have driven both goods and passenger trains, and I have been through Doncaster station, on and off, for 11 years. My engine, No. 74, is an eight-wheeled tank engine with trailing bogie and four coupled wheels, fitted with the vacuum automatic brake. On the 23rd September I left Doncaster western platform, at 8·21 p.m.—one minute late—with five vehicles behind the engine, to run to Knottingley. I stood for two minutes at Frenchgate home signal, and when it was taken off I went forward. I am aware that the station yard lines up to Marshgate Junction are worked on the "permissive" system. On starting from French gate home signal I should expect to find the line quite clear up to the signal cabin, and also clear from there to Marshgate home signal, unless I had a warning signal—a green flag by day, and a green lamp waved from side to side at night. I drive from the left-hand side of the engine, and on starting I can see a signal from the box from my side of the engine, but afterwards I leave it to my mate to watch the signal cabin. I have never before run past the level crossing gates when anything was standing in rear of Marshgate home signals. As I passed Frenchgate cabin I stooped, and looked across at the cabin. I saw nothing of any lamp, and I ran into the van in front of me before I had seen anything of it. The speed passing the cabin would be about 3½ to 4 miles an hour, steam was shut off and I was standing with my hand on the vacuum brake. Just as I got on to the level crossing, looking ahead through the cab window, I saw Marshgate home signal for the West Riding Junction "off" ; I was approaching the signals with my train entirely under control and I should not have passed the post without the proper signal having been lowered for me. About half-way between Frenchgate home signal and the signal box I gave one whistle for the main line, and when Marshgate Junction home signal was lowered I just opened the whistle again—once, for the main line—before the accident happened. I was hurt on the ribs and have been seven days off duty in consequence. Running out of the station I saw no train pass on the up line.

*Robert Gowland* states : I have been about 10 years in the Lancashire and Yorkshire Company's service, and a fireman four years. On September 23rd I was firing for driver Jackson, and my hours of duty were the same as his. When we left Frenchgate home signal, to run towards the cabin, I was on the look-out ahead for any caution signal from the cabin—which should be a green light, moved from side to side. I have not, in my experience, found anything in that section before, and have therefore not had a caution signal. I saw Marshgate signals at danger on leaving as above. I saw no train pass on the up line after we left Frenchgate home signal, and I could see the cabin clearly all the way. Neither when approaching nor passing the cabin did I see any green light shown, and I was watching carefully all the way, having nothing else to do. I saw the cattle wagon in front of us when we were only about two yards apart, and I saw no light on it. I was slightly hurt on the left hand. I had noticed the West Riding line signal, for Marshgate Junction, "off" just before I saw the wagon.

*Samuel Brown* states: I am employed as gatekeeper at Marshgate level crossing. After the Great Central engine had gone over the crossing, an up coal train passed. I then opened the gates to allow a cab to cross the railway. Then I shut them again across the road, to let the Lancashire and Yorkshire train across. It was then just starting out of the station.

*John Reynolds* states: I have been over five years in the Lancashire and Yorkshire Company's service. I am graded as a relief porter guard, and on September 23rd I accompanied the 8.20 p.m. goods train from Doncaster to Knottingley. I had signed on duty about 8 o'clock in the morning, and I had been off duty from 11.32 to 2.20; I was booked to leave off duty about 9 o'clock. After leaving the station, we were pulled up at Frenchgate Junction home signal, where we stood about two minutes, and I was then employed sorting letters and parcels in the van. I have worked through Doncaster yard previously with passenger trains, but I was not actually aware whether the absolute block system was in force or not between Frenchgate and Marshgate cabins. I had not looked out of the window for signals at all before the collision took place. I was not thrown down nor hurt in any way.

*Thomas Henry Greaves* states: I have been five-and-a-half years in the Great Northern Railway Company's service, and I am now 20½ years of age. Since June I have been employed as a telegraph lad, booking trains and doing the telegraph instrument work in Frenchgate signal box. On September 23rd I came on duty at 2 p.m. to work until 10 p.m. I took the time, and I booked the passing, of the up coal train, which would be as shown in the book. I am quite sure that the engine of the Lancashire and Yorkshire train was abreast of the cabin before the tail of the up coal train had passed. When the signalman pulled off his home signal for the western platform road I saw him go to the south end of the box, with the green light in his hand. The block books are nearly at the north end. The up coal train went very slowly (it was a heavy train) and it passed through the station on the up straight road. I don't know whether there was an open window at the south end of the cabin. After the signalman went to the south end of the cabin I don't know what he did, until he remarked to me that he thought the Lancashire and Yorkshire train had gone into the Great Central truck. He was then about the middle of the box.

## *Conclusion.*

The evidence in this case is of a somewhat conflicting nature, as regards details, although the circumstances under which the collision occurred are fairly clear.

At about 8.19 p.m. engine No. 485, Great Central Company, with a cattle wagon attached, came to a stand between Frenchgate and Marshgate Junction signal cabins on the down main line. The tail end of the wagon would be about 80 yards north of the former cabin, while the leading end of the engine was about the same distance south of the latter cabin and 20 yards in rear of the junction, down, home signals. The cattle dock is on the up side of the railway, and it was intended to push the wagon back into the dock over a through connection from the down line close to where it stood, and under the control of the man in Frenchgate cabin (W. Skelton). The up line was, however, occupied by a coal train, longer than signalman Skelton says he had anticipated, and consequently he was unable to carry out his plan at once, and he found it necessary, in the meantime, to clear the down line in order to allow the 8.20 p.m. Lancashire and Yorkshire Company's passenger train, from Doncaster to Knottingley, to pass.

At 8.20 Skelton obtained "line clear" for engine No. 485 and wagon from Marshgate Junction, and he told the man in the latter cabin to get the engine, &c., clear of the junction for the passenger train; signalman Rippon (Marshgate Junction) lowered his home signal for the West Riding, or Leeds, line, but no attention was paid to it by the driver (engine 485) as will be explained later on. Skelton then offered Rippon the passenger train, in reply to which the latter pegged the needle to "line occupied," and the former still allowed the train to draw forward from Frenchgate home signal, where it had been standing for about two minutes—which he states he is allowed to do under the special rules authorised for the station yard working. Skelton further says he duly carried out his instructions by showing a caution signal, with a green lamp, but that he was unable to give the passenger driver any verbal caution, as the up coal train was passing at the same moment. Immediately after the passenger train had passed Frenchgate cabin it ran into the cattle truck, with the results detailed above.

Dealing first with the reasons given for engine No. 485 not having gone forward out of the way, as signalman Skelton evidently intended and expected, driver Hackett's explanation amounts to this:—That he was told he was to put the cattle wagon into the dock, and to do so he knew he must either cross from the down line by the through road, or by the cross-over road north of the former, the points of both these roads being worked from Frenchgate cabin; his fireman watched the through road disc signal on the down side of the line, while he kept a look-out for any hand signal from the cabin on the other side, to draw ahead to the cross-over road points. Thus both men were necessarily occupied in looking back and not ahead, and they were unaware of the junction signal in front having been pulled off for them. Driver Hackett had apparently never previously been called upon to run on to the Leeds line to clear the junction, although the signalmen say this has to be done occasionally, and I think he was entitled to expect to receive some instructions from the signalman, shunter, or guard before he abandoned, even temporarily, the shunting operation which he was under orders to carry out. The evidence shows that more definite orders are needed to prevent any similar misunderstanding in the future.

Signalman Skelton, as I have said above, expected that the engine and wagon would be out of the way before the passenger train arrived, but he claims to be entitled to have let the train come forward even if he had known that the obstruction still existed, a caution signal being shown to the driver. As block working is not in force, I am scarcely in a position to say he is wrong in the view he takes, but I fail to see what advantage could ordinarily be gained to compensate for the risk which the operation necessarily involves. If there be no object under the circumstances in bringing the train forward, then it would be better to forbid that mode of working. I should, personally, read the instruction quoted above, in reference to the "Line occupied" signal, to refer only to cases in which the first train has passed out of the control of the man in Frenchgate cabin, and it is far from clear whether it was so in this instance.

When Frenchgate home signal was lowered for the Lancashire and Yorkshire passenger train, driver Jackson gave his engine steam, and he states that if a proper caution signal had been shown from Frenchgate cabin he would have seen it at that time; afterwards he looked ahead for the junction semaphore signals, leaving the fireman to watch the cabin, as he was better placed, owing to the curve, for the purpose. Passing the cabin, Jackson says he looked out again for any caution, but that he saw nothing of the sort, and his fireman says he could see the cabin clearly all the way, and no caution was given. T. Greaves, employed as train booker in the cabin, says he saw the signalman take a green light to the end of the cabin, where it would naturally be required to show the caution signal, but what use was made of the light he is unable to say. The ordinary, fixed, lights in this cabin seemed to me to be unusually bright, and a green light merely placed inside the window might be overlooked, especially if a train were passing on the up line as the signalman says was the case. A caution signal given to a driver 145 yards away (the distance of the home signal from the cabin) can never be regarded, in my opinion, as free from reasonable chance of being ignored. It is curious that while the signalman and the train booker are quite sure the goods train was passing the cabin at the same time as the passenger train, the enginemen of the latter saw nothing whatever of the former train. The evidence of the man employed at the level crossing close to the cabin would certainly seem to throw considerable doubt upon the signalman's story; but trains are constantly passing, and, as the gateman keeps no record of them, he is only able to speak from memory. The guard of the passenger train might have been able to give valuable evidence on the question of whether the caution signal was or was not properly shown from the cabin, but he was employed sorting parcels, &c., in his van, and he did not keep any look-out ahead, as I certainly think he should have done while running through the station yard. He is not a man of much experience in the position of guard, and due allowance may be made for that fact.

Another point referred to in the evidence is as regards the whistle which the driver undoubtedly gave when the junction home signal was lowered for the Leeds line. Driver Jackson says he whistled for the main line (York) signal, knowing that the one lowered was not the one which he required; on the other hand, signalman Skelton says it was only a short whistle, such as a driver gives to acknowledge a signal. The inference to be drawn from the latter proceeding would be that the driver, mistaking the signal, thought he had a clear road ahead of him. However this may be, nothing was seen of the cattle wagon by the driver or fireman of the Lancashire and Yorkshire train until, practically speaking, they were on to it; luckily, the driver of engine 485 had heard something coming out of the station, and he had just opened his regulator when the collision occurred, his engine and wagon being then driven forward about 215 yards.

When the cattle wagon first came to a stand on the main line, guard Dalton, who had come out of the station with it—riding on the engine—says he placed his hand lamp at the tail end of the wagon, and he then went towards the cattle dock to see if everything was clear there. The driver and fireman of the passenger train say there was no light on the wagon! I am satisfied that the light was there, but it was, I understand, not so high above the ground as a proper tail lamp would usually be, and the light may not have been a very good one. Signalman Skelton speaks in his evidence of a good light at the tail end of the wagon as it passed his cabin, but the guard does not profess to have placed it there at that time, and it seems out of the question that there can have been two lights at any time.

The evidence is thus by no means conclusive, and I can only say it seems probable, taking all the circumstances into consideration, that the enginemen did not look out as closely as they should have done for the caution signal from the cabin, or for any obstruction on the line ahead of them.

One other matter must be mentioned. The gates of the very busy public road level-crossing close to Frenchgate cabin are, I find, in no way controlled by the signalman, nor are they interlocked with the signals. The Company's attention was drawn to the matter by Major-General Hutchinson, when he inspected the re-signalling of the station in 1878, since which time the only thing done seems to be the provision of a subway for foot passengers. The necessity for making such alterations as will at least enable the crossing to be properly protected becomes more urgent every year, and neither the difficulty nor the expense of making these alterations is likely to become any less as time goes on. In the present position of affairs it is not too much to say that momentary inattention or carelessness on the part of the gatekeeper may at any time be attended with most disastrous results.

I have, &c.,
G. W. Addison,
*Lieut.-Col., R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

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**Printed copies of the above Report were sent to the Great Northern, Great Central, and Lancashire and Yorkshire Companies on the 30th October.**

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## LANCASHIRE AND YORKSHIRE RAILWAY.

Board of Trade (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.,
September 30th, 1897.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 17th inst., the result of my enquiry into the circumstances attending an accident which occurred about 1.56 a.m. on the 9th inst., at Rimington station, on the Blackburn and Hellifield line of the Lancashire and Yorkshire Railway.

In this case, the 1.40 a.m. Hellifield to Huskisson, Midland, goods train ran into the 8.30 p.m. Heaton Mersey to Carlisle, Midland, down goods train; the latter train having been shunted a few minutes previously from the down to the up line, for the purpose of allowing the 12.45 down passenger express, from Manchester to Hellifield, to pass.

The up goods train, which consisted of a six-wheels-coupled, tender, engine (No. 1771), and 25 vehicles, was not much damaged and no vehicle left the rails.

The down goods train consisted of a six-wheels-coupled, tender, engine (No. 1789), 24 loaded trucks, one empty truck and a brake-van. The driver of this train seeing the other train approaching had just commenced to set back, and the force of the collision caused the down train to separate in two places; the engine, with three wagons attached to it, came to a stand in about 200 yards, no wheels having left the rails; about eight wagons ran back 530 yards, some of them off the rails, where they struck the stone abutment of a bridge over the railway, four of the wagons being more or less smashed up; the remainder of the wagons (14), and the brake-van, were not pulled up until they had run about three-quarters of a mile. Further details of the damage to the rolling stock are given in an appendix.

The drivers and guards of both trains, and the fireman of the up train, were injured, but it is believed that the injuries are not, in any case, of a serious nature.

## *Description.*

This collision occurred about 220 yards south of the signal cabin at Rimington station, on the up main line.

The signal cabin is on the east side of the railway, at the south end of the station, and there are the usual signals.

The up distant signal is 1,074 yards north of the cabin.
„ „ home „ „ 288 „ „ „ „ „
„ „ starting „ „ 74 „ „ „ „ „
„ „ advance starting signal is 118 yards south of the cabin.

Nearly opposite to the cabin there is a cross-over road between the two main lines, and there are other connections which need not be described. The station is on a gradient falling towards the south at one in 101, and the up line falls from Gisburn—the next signal cabin north of Rimington—to a considerable distance south of Rimington on gradients varying from one in 91 to one in 107.

Between the distant signal and the station the up line is on a curve to the right of 40 chains radius.

The following is an Extract from the Lancashire and Yorkshire "Regulations for train signalling by block telegraph on double lines of railway:"—

"*Except during fogs or snowstorms, or on heavy falling gradients, after the 'Is Line Clear' signal for a goods train . . . . has been acknowledged, the line inside the home signal . . . may be obstructed by another goods train . . . . . performing shunting operations.*"

The following Extract from the Appendix to the Working Time Table may also be quoted:—

TRAINS SHUNTED ACROSS FROM ONE MAIN LINE TO THE OTHER.

"*Each signal-box will be supplied with a small tablet, lettered 'Trains across,' made to fit on the lever handles and drop on to the catch, so as to prevent the lever on which it is fixed from being worked.*

"*Signalmen must, before shunting a train across from one main line to the other, place the tablet on the handle of the lever working the home signal for the line on to which the train is to be shunted, and it must not be removed until the shunted train has re-crossed to its proper line. Theo bject of this is to remind the signalman that a train is shunted across, and these instructions must be strictly adhered to.*

"*The 'tablet' must not be placed on a spare lever when not in use. If there is room on the instrument shelf it must be placed there, but if not it must be hung in a suitable position on the wall of the signal-box, care being taken that it is not damaged by rough usage.*"

## *Evidence.*

*John Harrison* states: I have been 13 years in the Lancashire and Yorkshire Company's service, and a signalman between six and seven years. I am now a relief signalman, and I am employed at Rimington about once a week. On September 8th I came on duty, in Rimington signal cabin, at 9.5 p.m., to work until 7.30 a.m. on the 9th. The 8.30 p.m. Heaton-Mersey and Carlisle Midland goods train arrived at Rimington at 1.50 a.m. on the 9th, being then considerably behind time, (it is due at Hellifield at 12.15). The 12.45 passenger, down, express from Manchester to Hellifield is due to pass through Rimington about 1.57, so I took steps to shunt the goods from the down to the up line. At 1.48 I had acknowledged the "be ready" signal from Gisburn, for the 1.40 Hellifield to Huskisson Midland up goods train. I set the cross-over road points and gave the driver of the goods ex Heaton-Mersey a green light, to push his train back across to the up line. I am permitted by the rules to do this, after giving "line clear" to Gisburn for a goods train. I am supplied with a tablet, which should be fixed on the lever handle of the home signal of the line about to be obstructed before shunting a train across. I looked for it on the bell shelf but could not see it there. It was on a nail over the fire-place, as I found out after the accident. The engine of the Heaton-Mersey train came to a stand on the up line about 10 yards south of the cross-over points near to my cabin, and the fireman came into the cabin in accordance with the rules. He told me the signalman at the last cabin had called out to them. While he was with me, and I was in conversation with him about other matters, Gisburn gave me the up goods, for Huskisson, "on line" at 1.52. Soon after I lowered all the up line signals, including the distant signal, and at the same time I lowered the down line signals for the passenger express. The fireman asked me whether his train was on the main line or in sidings, and I replied "on the main line," but it did not even then occur to me that I was making a mistake in lowering the up line signals. As nearly as I can fix it the signals were taken off at 1.54. I turned round to book the express, and on looking to the front again I realised what I had done, and I at once put the up line signals back to danger. Directly after I saw the goods train approaching. It was a very clear night, and I think the train was then just coming out of the cutting. I saw that the approaching train would not stop in time to avoid a collision, so I sent the fireman back to his train to get his driver to move his train at once. I heard the fireman shout out to his driver, and the latter had just got the train in motion when the accident occurred.

*John Wain* states: I have been 17 years in the Midland Railway Company's service, six years a driver. On September 8th I came on duty at

7.30 p.m., to work until about 6 or 6.30 a.m. on the 9th. I left Heaton-Mersey sidings, Stockport, about three-quarters of an hour late, waiting for a connection from Warrington. I take the train about three times in 13 weeks, and I have done so regularly for more than a year past. In my experience the train seldom leaves at right time. On arriving at Rimington I had 24 loaded trucks and one empty truck, with a brake van at the rear of the train—26 in all. We lost more time on the way, being stopped by signals, but I had not been shunted before reaching Rimington. Sometimes I get to Hellifield before the passenger express. Sometimes I do not, and I am shunted at different places. I have frequently been shunted at Rimington, and we are always left on the main line and not put into a siding. On this occasion, after shunting across to the up line, I came to a stand with the engine well clear of the cross-over road points. I told my mate to put red lights in front of the engine, which he did, and then I sent him to the signal box. I was on the framing, with a long feeder, oiling the engine, when I heard my mate shout out "set back, he is coming into you." I had heard the train coming through the cutting just as he called out, and also the express coming on the down line. I did not see the up line signals off, and I had not heard them being lowered. I got on to the foot-plate as quickly as possible, released the steam brake, opened the regulator, and had set back two or three engine lengths, when the engine of the Huskisson train struck my engine. I was knocked back against the tender, and I received some bruises, but I was able, subsequently, to take the train forward as far as Hellifield. My engine, No. 1789, is a six-wheels-coupled, tender, goods engine, fitted with steam brake and tender hand brake. My engine was knocked back some distance (200 yards perhaps), but no wheels left the rails. I shut off steam again as soon as I could, and I applied the brake when I saw the other engine had come to a stand.

*Thomas Thompson* states : I have been 13½ years in the Midland Railway Company's service, 10 years a fireman. On September 8th and 9th I was firing for driver Wain, and my hours of work were the same as his. After being shunted to the up line at Rimington my mate told me to go to the signal cabin, and I did so. I had previously put two lights at the front of the engine, one on the chimney and one on the buffer. I told the signalman we were on the wrong road, and he said "yes, you are on the up main and you will follow the express." I then leant up against the mantelpiece, facing the instruments and the window; I went to the window to see if my lights were burning all right, when I could see the up starting signal off, and I called the signalman's attention to it. He was busy at the time. I said "I can hear another train coming besides the express," and he then said "what have I done?" He went to his signal levers at once, and the starter was at danger when I got outside the box; he gave me his red lamp, and told me to stop the approaching driver if I could. I could see my mate on the front of his engine, and I shouted out "set back, Jack, there is a train coming into you." I ran towards the station, in the six-foot, shaking the red lamp as hard as I could; I could see the fire flying from the wheels of the Huskisson engine, which were skidding, and as I saw the driver would not be able to pull up in time I got out of the way.

*William Traynor* states : I have been nearly 19 years in the Midland Railway service, 17 years a goods guard. On September 8th I came on duty at 8 p.m., to work until about 5.15 a.m. booked time, but with that train I am not usually off duty until about 6.30. I work the 8.30 goods from Heaton Mersey to Carlisle about once a fortnight. We are generally ready to start at 8.30, if we do not have to wait for connections. On the night of the 8th we left Heaton Mersey 50 minutes late, and we lost more time through being checked by signals before getting to Rimington, where we arrived at 1.50 a.m. We are oftener behind the express than ahead of it on arrival at Hellifield. We are shunted at various stations as may be necessary, but I should think it is several months since I was shunted at Rimington prior to the accident. After we had got over to the up road at Rimington I sat down in my brake-van, at the rear of the train, to watch for the down express; my brake was hard on. In a few moments I felt the driver was trying to push the train back, and just as I had released my brake the collision took place, and I was knocked down on to the floor and hurt on the shoulder and side. As soon as I could get on to my feet I put the brake on, and we pulled up on the viaduct, about three-quarters of a mile below Rimington station. I got out and found the train had separated, 14 wagons having gone on with me, the last pair of wheels with me, *i.e.*, those farthest away from the van, were off the road, but no damage was done to any of those trucks. Higher up the bank I found four wagons smashed, two being upside down on the top of another and foul of the down main line; one or more of these wagons had struck a bridge over the railway at this point; there were other wagons still on the rails at the bridge. Higher up the bank again our engine was standing with three trucks attached to it. After the accident we left for Hellifield with 20 loaded wagons, one empty wagon, and my van. I should have left Ancoats, which is the junction with the L. and Y. line, at 9.6 p.m., but I did not do so until 10.45 p.m.; the first box on the L. and Y. system is Midland junction.

*Edward Samuel Spencer* states : I have been 28 years in the Midland Railway service, 20 years a driver. On the 8th September I came on duty at 6.40 p.m., to work until about 6 a.m., on the 9th; I was detained, by the accident, until 10 a.m., and I had then to return to Liverpool as a passenger. My engine, No. 1771, is a six-wheels-coupled, tender, engine fitted with a steam brake and a tender hand-brake. I left Hellifield at 1.38 a.m. to run to Huskisson, with 25 vehicles behind the engine. Approaching Gisburn, the last cabin before Rimington, all signals were off for us, and when I sighted it the distant signal for Rimington was also off. I should then be running about 35 miles an hour. I usually shut off steam about midway between the distant signal and the station, and I did so on this occasion; I could see the home signal was off for me. On looking ahead, a little later, to look for the starting and advanced starting signals, I saw the home signal fly to danger. As near as I could guess we should then be about the length of my train away from the signal. The hand-brake had been screwed down a little with the blocks just rubbing the wheels, but I don't suppose the speed had been reduced at all. On seeing the signal in front of me go to danger I applied the steam-brake at once, and my mate screwed the hand-brake down. The steam-brake applies to all six wheels of both the engine and tender. My mate opened the sand valves. I used my whistle to attract the attention of the signalman and the guard. I reversed the engine, but we did not seem to pull up much, the wheels appeared to skid. When I got to the south end of the station, clear of the platform, I jumped off on the left-hand side, and fell on my feet, but I hurt the heel of the left foot (spraining it slightly). I have been off duty ever since. My engine did not appear to go forward more than a yard or two after the collision, and no wheels of my train left the rails. Just before jumping off I saw a red light being held up by a man on the left-hand side of the line.

*Robert Prescott* states : I have been nine years in the Midland Railway Company's service, seven years a fireman. On the 8th and 9th September I was firing for driver Spencer. and my hours of work were the same as his. I have heard the evidence given by my driver as regards the events prior to the collision, and it is correct. As soon as my mate reversed, the wheels seemed to "pick up." When my mate jumped off I followed him out on to the framing, and then back outside the tender ; when the collision took place, coal off the tender jammed my fingers and I let go, falling on my back on some boxing over the signal wires. I was injured on the back and shoulder and I have been off duty since then, but I am now fit to resume work.

*George Leadbetter* states : I have been 15 years in the Midland Railway service, a goods guard for 13 years. On the 8th September I came on duty at 6.55 p.m. to work until about 4.35 if the train were punctual, but I am often much later than that. Approaching Rimington the driver shut off steam somewhere about the distant signal. I was looking out ahead when I noticed the home signal fly to danger. I applied my hand brake at once ; it did not seem to take much effect ; there are no sand arrangements. I did not hear the driver whistle, but you cannot hear it in the brake when running like that. The speed would be about 35 miles an hour, no faster than usual. When the collision took place I was still standing up and the rebound of the brake knocked me down, and I was hurt on the knee. I have not been off duty at all since the accident. The link of the coupling between the third and fourth wagons in front of my van broke.

## *Conclusion.*

It would appear from the evidence that the circumstances under which this collision occurred are as follows :—

A down goods train, from Heaton Mersey to Carlisle, arrived at Rimington at 1.50 a.m., a down passenger express being due to pass through the station at 1.57, and the signalman at once took the necessary steps to clear the down line for the latter by shunting the former on to the up line. The goods train came to a stand, on the up line with its engine, probably, not more than 25 or 30 yards south of the cabin—where it was protected by the up starting and up home signals, about 100 yards and 315 yards away respectively. The fireman of this train placed head lamps on the engine, showing a red light, and then he proceeded to the signal box, as a reminder to the signalman, in accordance with the Company's rules.

Shortly before the arrival of the down goods train, the signalman had accepted, at 1.48, an up goods train from Gisburn—the next cabin north of Rimington—and at 1.52 he received the "train entering section" signal for that train. At about 1.54, as nearly as he can give it, he pulled off all the up signals, forgetting that he had the shunted train standing on the up line although the fireman was alongside him in the box at the time. It may be noted here that had the signalman complied with the instruction quoted above, to place the tablet supplied for the purpose on the up home signal lever, before shunting the train from the down to the up line, this most grave blunder could hardly have been made. He explains the omission by saying that he looked for the tablet on the instrument sheet but could not see it, although he subsequently found it on a nail over the fireplace ; he is only occasionally employed at Rimington, but this is hardly a valid excuse for not knowing where to find an appliance which he is ordered invariably to make use of for certain purposes.

Fireman Thompson says, that on going to the cabin window to see if his engine lamps were showing a good light, he noticed the up starting signal was "off," and that he called the signalman's attention to the fact. The latter does not, however, appear to have paid much attention if he heard what was said, but both men almost immediately afterwards realized that the up goods was approaching the station with all signals "off." The signals were then, as quickly as possible, thrown back to danger, and the fireman ran out of the cabin with a red light, calling out also to his driver to get his train in motion and to set it back.

The latter, who was oiling his engine at the time, had not noticed the fact of the signals having been lowered, but he heard the approach of the up train at the same time as the fireman called out to him ; he got quickly back on to the footplate, released the brake and opened the regulator, and he thinks he had moved back at least two or three engine lengths before the collision took place, with the results described above. Although injured he was able, subsequently, to take his train to Hellifield.

The driver of the up goods train had found the distant signal "off," and when he first saw the home signal of Rimington station it was also "off ;" he was approaching the station at considerable speed when the home signal was suddenly thrown to danger. He estimates that he was then about the length of his train away from the signal, or say 200 yards ; he did what he could to pull up his train, but seeing that a collision was inevitable, on the falling gradient, he jumped off after passing through the station and was only slightly hurt. The fireman, who appears to have also contemplated jumping off, was thrown off the tender framing, where he was holding on, but fortunately escaped serious injury. Both these men have been off duty some time since the accident.

I see no reason to attach any blame whatever to these men, nor to the driver of the other train ; the responsibility for the occurrence rests entirely with signalman Harrison ; but I am disposed to think that fireman Thompson, by entering into conversation with the signalman on matters quite outside their duty, probably did more harm than good by his presence in the cabin.

It would appear from the evidence that trains are frequently shunted at this station, to allow fast trains to pass, and refuge sidings should therefore be provided on the proper side of the railway. The down goods train was, it may be noted, one-and-a-half hours behind time, and guard Trayner and driver Wain state that it very rarely leaves Heaton Mersey sidings at the booked time !

I have, &c.,
G. W. Addison,
*Lt.-Col., R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

## APPENDIX.

### Damage to Stock.

North British wagon 2,898, loaded, had eight side planks, four end planks, two end pillars, one through rod, and one bearing spring broken, one axle guard and one draw bar bent.

Midland wagon 19,212, loaded, was smashed up.

North British wagon 12,283, loaded, had both headstocks, two longitudinal, one diagonal, four end pillars, one side rail, six side planks, four end planks, one buffer casting, one buffer shoe, one buffer rod, four axleboxes, two corner plates, and one brake block broken, the brakework drawbars, buffer rods bent, and the axle of one pair of wheels bent.

Midland wagon 103,432, loaded, had one side plank and the sheet damaged.

### Damage to Engine 1,789.

Leading ends of framing badly bent.
Footplates broken and bent.
Buffer plank and buffers broken.
Leading splashers broken.
Lamp irons broken.
Cylinders require to be taken down and replaced with new bolts, &c.

### Damage to Engine 1,771.

Leading ends of framing bent.
Footplates bent.
Buffer plank and buffers broken.
Leading splashers broken.

Printed copies of the above Report were sent to the Lancashire and Yorkshire and Midland Companies on the 15th October.

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## LANCASHIRE AND YORKSHIRE RAILWAY.

Board of Trade (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.,
November 16th, 1897.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 29th ultimo, the result of my enquiry into the causes of a collision which occurred at 10 p.m. on October 22nd, at Ellesmere sidings signal cabin, nearly half a mile west of Walkden station, on the Lancashire and Yorkshire Railway.

In this case, a coal train from Wigan to Swinton, while crossing from the down to the up slow line, was run into by the 9.15 p.m. empty coal train from Miles Platting to Pemberton. The former train consisted at the time of 31 loaded and two empty coal wagons and a brake-van ; the Miles Platting train had 35 empty coal wagons and a brake-van, drawn by a six-wheels-coupled tender engine, running tender in front, fitted with the vacuum brake.

No wheels of the latter train left the rails, but the engine was somewhat damaged ; the Wigan train had two wagons knocked off the rails, and several vehicles were damaged—further particulars are given in an appendix.

The guard of the Wigan train, who was riding in the brake-van, had his head severely injured.

## *Description.*

Ellesmere sidings signal cabin is, as already stated, nearly half a mile west of Walkden station. There are four lines of rails, in the following order, from the north side, viz. : up slow, down slow, up fast, down fast. There is a cross-over road between the two slow lines, opposite to the cabin, and there are sidings on the north side of the railway with trailing connections on both slow lines. The only signals to which it is necessary to refer are the home and distant signals of the down slow line : the home signal is between the up slow line and the sidings, covering the cross-over road referred to above, and the distant signal is underneath Walkden station down starting signal, 630 yards east of the home signal. By day there is a very good view of the home signal, but it does not appear to have been generally regarded as a good signal at night.

The point of collision was at the fouling point of the cross-over road and the down slow line, 33 yards inside the home signal.

The line rises very slightly from Walkden station to about 150 yards east of Ellesmere sidings cabin, and then falls at 1 in 212 to the home signal. For more than a quarter of a mile east of the cabin the down line is on a curve to the north or right-hand.

Rule 228 of the " Rules, Regulations, and Bye-laws of the Lancashire and Yorkshire Railway Company " bears upon this case, viz :—

> " *The absence of a signal where a signal is ordinarily shown, or a signal imperfectly exhibited,* " *must be considered a danger signal and treated accordingly.*"

## *Evidence.*

*William Booth* states : I have been nearly 19 years in the Company's service, a fireman 13 years, and I have been driving on and off for eight years both goods and passenger trains—probably the former more generally. I have driven trains through Walkden on both fast and slow lines, and I am acquainted with the signals. My engine, No. 570, is a six-wheels-coupled tender engine, fitted with the automatic vacuum brake—applying to all 12 wheels of engine and tender. On October 22nd I started from Miles Platting at 9.15 p.m., with 35 empty coal wagons and a brake van for Pemberton. At Walkden station all the down slow line signals were off for me, but Ellesmere sidings distant (which is underneath Walkden starting signal) was at danger. The speed would then be 15 to 18 miles an hour. We were running tender first, and I was on the right-hand side of the engine as we ran (proper left-hand side). It was a very dark night, and I saw nothing of the home signal until I was almost underneath it ; the light was almost out. The engine of the Wigan to Swinton train was beating very hard, with a heavy train on, and I should have seen the signal sooner if there had not been so much steam about. At almost the same time as I saw the signal I noticed the Wigan train was crossing from the down to the up slow. My speed would then be only about three to four miles an hour. I think we struck the twenty-second wagon from the engine and the ninth from the brake, which was knocked off the road—the links being broken between the ninth and tenth wagons. No wheels of the engine or wagons of my train left the rails. Neither I nor my mate was hurt at all. I was under the impression that I ought to be stopped at the cabin in rear if anything was being crossed at Ellesmere sidings cabin from the down slow to the up slow. I am aware now I was wrong. I mean that I thought I ought to have been kept back at Walkden until the Wigan train had got across. I saw the station-master fetch the light out of the signal lamp and I said " It is not out properly," and he said " No, but it might as well be." It was just burning.

*Joseph Johnson* states : I have been 14 years in the Company's service, eight years a fireman. On October 22nd I was firing for driver Booth. I have been through Walkden pretty often with passenger trains on the fast and slow lines, but not often with goods or mineral trains. As we were approaching Ellesmere sidings cabin I looked across from my side of the engine, where I can usually sight the home signal, but I could see nothing of it. It was a very dark night. The speed would then perhaps be seven or eight miles an hour, speed having been reduced after passing the distant signal, which was at danger. I said to my mate, " I cannot see that signal," and he replied, " Nor I either." I then put my hand brake hard on, and I believe he applied the vacuum brake. I had not seen the signal at all before the collision. As soon as we stopped I went back to about 20 yards behind the signal post, when I could just see the red light ; but the light appeared to be on the point of going out. The steam from the Wigan engine was blowing across the signal.

*Edmund Halliwell* states : I have been a station-master 14 years, and at Walkden six months. As soon as I heard of the accident I went to the spot, and as I passed the down slow home signal I noticed that it was showing a very poor light indeed. I do not think the driver could have seen it until he was almost at it. Porter Halliwell had lighted the lamps that evening, which were cleaned by signalman Stephens. I have not had any complaint as regards the position of the signal nor of the light in it. The box is closed from 12 noon to 6 p.m.

***Robert Mather*** states: I have been four years in the Company's service, and a signalman in Ellesmere sidings cabin since October 2nd. On the 22nd October I came on duty at 6 p.m., to work until 4 a.m. on the 23rd. The 8.15 p.m. Wigan to Swinton coal train arrived at my cabin at 9.34, on the up slow line. It was then shunted on to the down slow to allow the 8.30 Southport to Manchester up passenger train to pass. The shunting operation was completed at 9.36, and the passenger train passed at 9.45 (proper time). The goods train had work to do, and at 9.55 Walkden cabin accepted that train from me on the up slow. I then lowered my starting signal, and the train started; it was a very heavy train, and would not start very quickly. At 9.55 Walkden offered me the 9.15 down goods, Miles Platting to Pemberton, which I accepted at once, although the Wigan coal train was on the line at the time, inside the home signal—this I am allowed to do by the rules. The Miles Platting train was given me "entering section" at 9.57, and the accident happened at 9.59. When I came on duty at 6 p.m. I walked past the down slow line home signal, and the light was then burning well. I had noticed the back light of the signal a few minutes before the accident, and it then appeared to be all right.

*Alfred Barton* states: I have been 17 years in the Company's service, and a goods guard 10 years. On the 22nd October I came on duty at 8 p.m., to work until about 7 or 7.30 a.m. on the 23rd. On the above date I left Wigan at 8.15 to run to Swinton, and on arrival at Ellesmere sidings I had 31 wagons behind the engine; we picked up two at Ellesmere, making 31 loaded and two empty (coal) wagons and a brake van. At Ellesmere we were shunted from the up slow to allow a passenger train to pass. I should say that about three minutes elapsed between the time when I had finished coupling on and when the accident happened. I had just got into the van and booked the time of starting when the collision occurred. I do not think there was any unnecessary delay at all on the driver's part. I was standing up, and I was knocked down insensible and have been off duty ever since.

*Signalman Stephens* states: I was employed on October 22nd in Ellesmere sidings cabin from 4 a.m. to 12 noon, and then for two hours cleaning the signal lamps and attending to the points. The porters bring the lamps (12) to the cabin. All the lamps are cleaned every day, and new wicks are fitted to them every Monday. On the above date I cleaned and trimmed all the lamps. I don't think I had to add any oil that day. The lamps are lighted at the cabin, and put in position on the signal posts by porters.

*Porter Halliwell* states: I am employed at Walkden station, and on October 22nd I had to walk through the line and light the lamps at four signal cabins, afterwards placing them in their cases on the signal posts. I took the lamp for the down slow line home signal at Ellesmere sidings cabin to the signal post at about 3.30 p.m., and when I left it was showing a good light.

## *Conclusion.*

It appears from the evidence that a coal train, from Wigan, arrived at Ellesmere sidings box, on the up slow line, at 9.34 p.m., where it was crossed over to the down slow line—to clear the former road for an up passenger train. The passenger train passed at 9.45, but the other train had shunting to do, and it was not until 9.55 that signalman Mather lowered his starting signal, and set the cross-over road points, for it to proceed on its journey. The train (ex Wigan) was a fairly heavy one, and it was starting just at the foot of a rising gradient of 1 in 212; although the guard says he does not consider there was any unnecessary delay on the driver's part, this train had not got clear of the down line when the collision took place at about 9.59.

At 9.55 the signalman in Walkden station box offered signalman Mather a coal train, from Miles Platting, on the down slow line, and the latter accepted it with "line clear"—as he was entitled to do, under the Lancashire and Yorkshire Company's rules—the down line being of course occupied at the time, only a short distance inside his home signal. The driver of that train, William Booth, on arriving at Walkden station, found the down slow line signals off for him, but Ellesmere sidings distant signal at danger, and he seems to have taken steps to reduce speed, and to get his train under control. As he approached Ellesmere sidings cabin, where there should be a good view of the home signal, neither he nor his fireman could see it; when quite close to it, they found it was at danger. The speed at this time was probably very moderate, the driver estimating it at three to four miles an hour, but he could not stop his train in time to avoid a collision with the read portion of the Wigan train, which was still on the crossover road, at a point 33 yards inside the home signal. The guard of the latter train, who was standing up in his van, was thrown down and badly hurt, both men on the Miles Platting engine escaping uninjured.

After the accident it was found that the signal lamp was almost out, and the station-master at Walkden says "the driver could not have seen the light until, practically speaking, he arrived at the signal." It was the driver's duty to have taken the absence of a signal as being equivalent to a danger signal—*vide* Rule 228, given above—and he should have stopped before he got to the signal, the position of which must have been fairly apparent by the lights in the signal box. At the same time there is considerable excuse to be found for him in this instance, and I must record my opinion that it is not a safe mode of working, to allow a driver to run up to a signal on a falling gradient, when there is only a clearance of 30 yards ahead of that signal, without proper warning being given him of the obstruction ahead.

The cause of the failure of the signal lamp is not apparent from the evidence, but as the man (signalman Stephens), whose duty it was to clean and trim the lamps, had been employed in the signal cabin from 4 a.m. to 12 noon, before he attended to the lamps, I do not think it need be greatly wondered at if he failed to give that careful attention to the lamps which they should receive.

It is, I understand, proposed to turn the post on which the home signal is carried, slightly, in order to give a better view of that signal at night.

I have, &c.,
G. W. Addison,
*Lieut.-Col.*, *R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

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## APPENDIX.

### Damage to Engine 570.

Engine main vacuum pipe broken. One engine footstep damaged.

Tender :—Left-hand side of buffer plate broken. Two axle-boxes, left-hand side, broken. Left-hand trailing axle-box horn plates broken. Left-hand foot-plating round the tender damaged. Hand-rail back of tender broken. Hole knocked in back of tank.

### List of Damaged Wagons.

Oldham Co-operative Society's coal wagon, No. 19, Tyldesley to Oldham.—Side badly damaged ; one spring and two axle-boxes broken.

Tyldesley Coal Company's wagon, No. 597, Tyldesley to Oldham.—Two buffer planks and one buffer broken.

Bridgewater Trustees' wagon, No. 358, empty. —Broken axle-box and axle-guard.

Oldham Co-operative Society's coal wagons, Nos. 13 and 15 ; Tyldesley Coal Company's wagons, Nos. 485, 555, and 602 ; and R. Leming's wagon, No. 13, Tyldesley to Oldham.—Damaged slightly.

Printed copies of the above Report were sent to the Company on the 26th November.

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## LANCASHIRE AND YORKSHIRE RAILWAY.

Board of Trade (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.,
November 17th, 1897.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 3rd inst., the result of my enquiry into the circumstances attending the fatal accident which occurred about 5.55 p.m. on the 1st inst., at Victoria station, Manchester, on the Lancashire and Yorkshire Railway, under the following circumstances :—

Three empty carriages, forming part of the 6.27 train from Manchester to Oldham, were left standing on No. 3 road, Newtown sidings, while the engine and the remaining carriages were shunting in the sidings. Two boys, servants of the Company, got into the brake-van to ride down to Victoria station, and, thinking that the engine was on the train and everything was ready for the train to proceed to the station, they released the brake. The sidings being on a steep gradient, falling towards the station, and the road having been made for the train to come out of the sidings, the three carriages ran away down the incline into No. 3 bay platform, overturning the buffer-stops at the end of the bay and wrecking an inspector's office. When the carriages came to rest, the leading vehicle was entirely, and the second vehicle almost entirely, on the platform.

A passenger who was passing behind the buffer-stops at the time was killed on the spot, another was fatally injured and died in hospital a few hours afterwards, and four others are reported to have sustained more or less severe injuries.

The two boys were thrown down on to the floor of the van, and one of them was rendered insensible by the shock.

The three vehicles consisted of two composite carriages and a second class half brake-van, the van being in front as they ran into the station.

The following damage was done to the rolling stock :—

| | |
|---|---|
| Composite, No. 6 ... | ... Body moved. |
| „ No. 121 ... | ... Two corner pillars broken, one buffer bent, one axle box broken. |
| Second class, half-van ... | ... Two head stocks, end panels, end lights, side projections, four buffers, etc., broken. |

## *Description.*

Newtown carriage sidings are on the north, or proper down, side of the Lancashire and Yorkshire Railway, between Victoria station and Miles Platting. Between those stations there are now four main lines, running east and west, viz.: down north, up north, down south, and up south, the latter being on the extreme south side of the railway. Access to the sidings is provided at both Newtown No. 1 and Newtown No. 2 signal cabins, with various connections on all the main lines. At the former cabin there is a shunting neck, and the points of the outlet lie normally for the neck, as usual, so as to protect the main lines ; at the latter cabin there is an engine turntable and a water column, inside the sidings.

The following distances should be noted, from the buffer-stops at the end of No. 3 bay platform eastwards :—

| | |
|---|---|
| To Victoria Bays cabin ... ... ... ... ... | 104 yards. |
| To Millgate cabin... ... ... ... ... ... | 376 „ |
| To Newtown No. 1 cabin ... ... ... ... | 853 „ |
| To Newtown No. 2 cabin ... ... ... ... | 1,271 „ |

The line falls sharply from Newtown No. 2 towards the station, at 1 in 59, for about 900 yards ; it is then level for 17 yards ; falls again at 1 in 46 for 58 yards, at 1 in 54 for 87 yards, and at 1 in 1,320 for 44 yards ; after which it rises at 1 in 113 for 55 yards, and is level for 77 yards to the buffer-stops.

Before starting, the three carriages were standing on No. 3 siding, with the leading end 141 yards east of Newtown No. 1 cabin.

The only signals which need be referred to are the siding signals worked from Newtown No. 1 cabin, which are carried on a post placed between the down north main line and the sidings, about 70 yards east of the cabin. There are three arms on the post, the topmost arm being the signal for proceeding from the sidings to the up south main line ; this signal had been pulled off for the empty carriage train to proceed to the station.

Rule 20 of the "General Rules and Regulations" of the Lancashire and Yorkshire Railway Company is as follows :—

. . . . "*No officer or servant of the Company must be allowed, unless in the execution of "his duty, to ride on the engine, or in the brake van . . . . without written or printed "permission from a properly authorized officer of the Company.*"

Another rule which may be quoted is as follows :—

"*No engine must be allowed to push a train of carriages or wagons on the main line, unless within "station limits, but must in all cases draw it, except under special regulations, when assisting up "inclines, or when required to start a train from a station* . . . . "

## *Evidence.*

*Richard Antrobus* states : Prior to November 1st I had been employed by the Lancashire and Yorkshire Railway Company for nine weeks, and I am now fourteen years and four months old. I am employed as train-booker at Newtown No. 2 signal cabin, and on the above date I came on duty at 8 a.m. to work until 6 p.m. At 5.50 I left the cabin and I went towards the empty carriage train in the sidings, to ride down to the station in it—to save the walk—as I had always done during the time I had been employed in the cabin. One of the signalmen in the cabin told me when I first began work there that it would be safer for me to ride than to walk, as I did not know the road. I did not know there was any other way for me to get home. When going off duty at that time I have always ridden down in the carriages for the 6.27 train from Manchester to Oldham, and always in the van nearest to the station. When we began doing this, porter Bennison was acting as shunter, and he always rode in the van down to the station ; for about eight weeks past porter Crossley has been acting for Bennison, and he does not always ride in the van, although he generally does so (he always accompanies the train). On the day in question I found the train on No. 3 siding, and in about the same position as usual; the engine was not on the train, but was coming back to it and was close to the carriages. I did not see Crossley. When I got to the lower end of the train I got into the van at once, and I found Bateson (train booker in No. 1 cabin) in the van, who has nearly always ridden down with me. As I was getting into the van I noticed the three siding signals, lower down the sidings, and the top arm was "off"—I am certain of this. After getting into the van I felt the carriages bump, which I thought was due to the engine coming on to them—our van then began to move, and soon went quicker and quicker. I had not touched the brake and I had not noticed Bateson touch it, nor had I looked at the position of the brake handle. As we passed, going down the hill, I saw all signals were "off" for us, and when we got close to the station I said to Bateson that I did not think we should stop at the buffers. On striking the buffers, the van jumped up and we were knocked down on to the floor, and I was hurt somewhat on the side of the head. I never thought of putting the brake on, and I thought the engine was on the train. The engine pushes the train down more often than it pulls it. The lamp (gas) was in the van and we lighted it, and turned it so as to show a white light, placing it in its usual position—as I have seen the shunter do. This was the first occasion that I or the other boy had lighted the lamp. If I said before the Coroner that either of the shunters had told me to light the lamp it was incorrect—neither of them had ever told me to do so. I have sometimes taken the brake off when the shunter was present. The signalman had told me not to touch anything in the van without the shunter's permission. I heard no whistle from the engine before we started. I have known the shunter to go down to the signals, or near them, and blow a whistle and wave his hand-lamp, in order to get the signal taken off for us—this would frequently happen.

*Thomas Bateson* states: Prior to November 1st I had been employed nine weeks by the Lancashire and Yorkshire Company, all the time as train-booker in Newtown No. 1 cabin. I am nearly fourteen years and five months old. On November 1st I came on duty at 8 a.m. to work until 6 p.m. At 5.50 p.m. on the above date I left the cabin, and walked up the sidings to the brake van of the empty carriages for the 6.27 train from Manchester to Oldham. This was my regular custom, as I had been told by the signalman it would be safer than walking to the station. Both I and Antrobus go home by train from Victoria station. Sometimes the shunter rides down with us and sometimes he does not. Bennison rode with us more regularly than Crossley has done. On the day in question I found the train where it usually is. I got into the van at once, without seeing Crossley; I do not know whether the engine was on the train, but I am sure there were more than three carriages on it. It was a dark night. I had been in the van about a minute when Antrobus came there. The signalman (Jones) had told me to hurry up, or I might miss the carriages; I do not know whether he had made the road before I left the cabin, but as I walked up the siding I noticed that our signal was not "off." The red light was still showing when Antrobus got into the van. He said, "I will light the lamp," which I have never known him do before. As far as I know the shunter has never asked him to do this. I have not lighted it myself. After we had lighted and fixed the lamp I turned the wheel and took the brake off. He saw me do this. There was no chain on the brake. Sometimes the brake has been taken off by the other boy before I have got into the van, and the shunters have sometimes asked us to take it off. I have not taken it off before without the shunter telling me to do so, but I thought on this night he had forgotten to tell us. When we fixed the light up I noticed the signal was off. Directly I took the brake off the carriage began to move. I had not felt the engine come back on to the train. When we began to move we thought the engine was with us, and it never occurred to me while running down the bank to the station that the engine was not with us. We never thought about the brake at all. On striking the buffers at the end of No. 3 platform I was thrown from one end of the van to the other and knocked senseless. I had to go to the hospital, but was only detained an hour or two. The engine almost always propels the carriages. After the signal came off, and while we were taking the brake off, I heard the engine whistle. I do not think there were other engines in the sidings. It gave one short whistle. If the driver wants the signal to be pulled off he gives three whistles and a crow, but he did not do so as far as I know on this occasion. As far as I know, the shunter always comes to the cabin if he wants to get the road set and the signal taken off.

*Edwin Jones* states: I have been four-and-a-half years in the Company's service, two years a signalman. For the last 12 months I have been employed in Newtown No. 1 cabin. On November 1st I came on duty at 2 p.m. to work until 10 p.m. Bateson was employed as train booker in the cabin. The pilot engine for the carriages of the 6.27 train to Oldham passed my cabin on its way to No. 2 cabin at 5.19 p.m. Those carriages usually come out of the siding at my cabin between 5.50 and 5.55. At 5.48 a London and North Western train passed on the up north line, at 5.49 a passenger train from Oldham passed on the up south line; and also, at 5.49, a passenger train passed on the down south line (to Ashton). The last mentioned train was cleared back to me at 5.51. At 5.50 I went to the door with my hand lamp to see if the shunter was signalling to me, to let me know that the carriages were ready to come out, which signal we wait for before offering the train to Millgate cabin. I heard the engine whistle three and a crow. I was outside the cabin on the landing at the top of the steps, which are at the upper or east end of the cabin. I took the engine to be at the upper end of the train, but I could not see it; it is very seldom that the engine drags the carriages down. I also saw a white light waved, as it seemed to me, from near the van, and I also heard the guard's whistle blown at the same time—the guard's whistle and the engine whistle cannot be mistaken for one another. It is a common occurrence for the driver to whistle, and also, at the same time, for the guard to signal to me as above when they are ready to leave the siding. The guard usually signals as he walks back down the train, and if I take no notice he would probably come outside the cabin and call up to me. I then gave "be ready" to Millgate cabin at 5.51, and the train was accepted at 5.52. I set the road at once, and pulled off the siding signal for crossing to the up south line. Then I went to the door and gave a green lamp, and almost immediately I saw the carriages coming towards me—with a white light showing as usual from the usual place. My attention was then called on the up south instrument, by Newtown No. 2, and while I was attending to it the carriages ran past the cabin. I went to the window to look for the tail lamp, but could only see a red light at Millgate which I took for the tail light of the carriages. I considered that it was my duty to attend to the call from Newtown No. 2 rather than to watch the train pass—in order to see the tail light. If I had seen that the train was incomplete I could only have sent the "train divided" signal to Millgate. Bateson left the cabin at 5.48.

*Frederick Crossley* states: I have been nearly two years in the Company's service as a porter. For nearly 12 months I have been employed at Victoria Station, and for seven or eight weeks prior to November 1st I have acted as shunter in Newtown sidings. On the above date I came on duty at 8 a.m. to work until 7 p.m. I left Victoria Station about 5.18 with pilot engine, No. 255, to go to the sidings. We entered the sidings at No. 2 cabin, where I got off the engine, and the latter went to get water and to turn on the turntable. I waited for the engine. This work would be completed, as near as I can guess, about 5.40. I made a road into No. 6 siding, as two carriages had to be taken there from the empty carriage train standing in No. 3 siding. I went back with the engine to the train, then consisting of nine vehicles. There are brake carriages at each end of it. I coupled the engine to the nine carriages, went back to the rear brake van and screwed the brake hard on (it was already on, but not fully). No boy was then in the van. I then uncoupled the six coaches next to the engine from the other three, and I gave the driver a white light to go ahead. I rode on the footboard of the last vehicle. It would be about 5.45, and I was on the north side of the carriages. I don't recollect whether the driver whistled or not before he moved. After getting into No. 6 siding, which was already pretty well filled up, I unhooked the two coaches and I gave the driver a white light, up and down, to go ahead. I was still on the north side of the carriages, between Nos. 6 and 7 sidings. The driver did not whistle at all before coming out of No. 6, but he moved ahead at once when I signalled to him. After coming out of No. 6 I had only to move one pair of points to enable us to push back into No. 3. Going back down No. 3 road I was surprised to find that the carriages I had left there had gone away. I was still on the north side of the carriages, and I should not be able to see the siding signal. The driver never, at any time, gave three whistles and a crow. I have never previously known the siding signal taken off for us to come out before I was ready for it. We draw the train down oftener than we propel it. As a rule, if the engine is at the lower end the driver gives three whistles and a crow to let the signalman know we are ready, but if the engine is at the upper end I endeavour to gain the signalman's attention by whistling and waving a white light up and down in front of me. The semaphore signal is not taken off until one of us has let the signalman know we are ready, and sometimes we both do it. I never light the lamp, to act as a head light for the train, until I get into the van, after giving the signal to the signalman described above. I have never asked the boys to light the lamp, and they have never done so. The boys have asked me if they might take the brake off and I have said yes, but I was always inside the van at the time. The vacuum brake is always connected and available for use on the train as we go back into the station. I found the hand-brake chained when we first went down to the carriages, and I left it chained. There were seven lighted vehicles and two not lighted on the train when I first went to it. I saw no one else in the sidings, and there was no other engine there. I used my whistle two or three times during the shunting. When the carriages are propelled to the station I always ride in the leading van.

*Frank Macfarlane* states: I have been 12 years in the Company's service, 10 years a signalman, and employed in Newtown No. 2 cabin for two years. On November 1st I came on duty at 2 p.m. to work until 10 p.m. On the above date engine No. 255 arrived at my box at 5.18, and passed into the sidings at 5.19. A London and North Western train passed on the up north line at 5.47, an Oldham train on the up south at 5.48, and an Ashton train on the down south at 5.49. The Oldham train was cleared at 5.59, and the London and North Western at 6.2, the Ashton train at 5.50. Apparently the two up lines were kept blocked, to admit of the empty carriage train being brought out of the sidings. This is not an unusual mode of working under the circumstances. As soon as the engine got inside the sidings it went on the turntable, and then took in water at the column close to the table. Then the engine went to the sidings and began the shunting. At about 5.45 the man in No. 1 cabin asked me if the pilot was ready, and I said no, it was shunting, and he asked me again about 5.50, when I told him the engine was backing into the sidings. I heard nothing more until probably about 6 o'clock, when I was told the train had broken in two, and that the carriages had run into Victoria. The cabin windows and door were open all the time the shunting was going on. I heard the driver give several times a pop on the whistle, to acknowledge the shunter's signals. I never heard three whistles and a crow given by the pilot-engine, but the driver of the Ashton train gave three whistles (no crow) about 5.49 as he passed my cabin. This was to get the Miles Platting signalman to lower the junction signal. When the Ashton driver whistled, the pilot engine had already done two or three shunts.

*George Nuttall* states: I have been sixteen years in the Company's service, and a passed driver eight years. I am only graded as a fireman and acting driver, but at present I am regularly employed as a driver. On November 1st I came on duty at 1.25 p.m., and I generally leave off work on that tour at about 12 midnight. My engine, No. 255, is an eight-wheeled side-tank engine, six coupled wheels and radial trailing wheels, and it is fitted with the automatic vacuum brake. On the above date I left No. 2 platform at about 5.17, to go to Newtown sidings. We got into the sidings at once, turned the engine, and gave it water. The first thing I did then was to draw some carriages on No. 6 siding up a little, to clear the points at the lower end of the sidings; then I backed along No. 3 road on to the empty coaches for the 6.27 Manchester to Oldham train. I have taken the empty train before, but I had not been in the Newtown sidings for some time previously. I took some vehicles off the train and put them into No. 6 siding. Shunter Crossley gave the necessary signals with his hand lamp. He never whistled to me, so far as I am aware. I acknowledged his signals sometimes by whistling, but not always; I should give a short whistle. I never at any time during the operations gave three whistles and a crow. When taking the empty train from the sidings I have been at one end of the train just as often as at the other.

*The following statements were obtained at my request by the Passenger Superintendent.*

*William Elliott*, signalman at Millgate Junction box, Victoria, states: I have been in the service of the Company for 12 years, a signalman for 10 years, and relieving at this box for nearly two years. On November 1st I came on duty at 2.0 p.m. to work until 10.0 p.m. The empty carriages to form the 6.27 p.m. train to Oldham were offered to me at 5.51 p.m. from Newtown No. 1 box. I accepted them at 5.52. I was not in a position when they were offered to me to accept them immediately, because there was an engine crossing their path. I received "train entering section" signal for them immediately after giving the acceptance. They passed me at 5.55 p.m. I observed there were only three carriages, and they passed me at about 30 miles per hour. I at once gave "5—5" (train divided signal) to Bay sidings box, and also gave "4—5" (train passed without tail-lamp signal) to Newtown No. 1. About three or four seconds after I sent the signals on the block instruments I heard the crash of the carriages running into the buffers.

*William Rodgers*, porter, Victoria Station, states: I have been in the service for about three years, and on November 1st came on duty at 11.15 a.m. to finish at 11.15 p.m. At about 5.55 p.m. I was walking from No. 1 platform and was near the waiting room opposite No. 2 platform when I observed the carriages coming in No. 4 road. I saw the speed was excessive, about 40 miles per hour, and that there was no engine attached to the vehicles. I immediately shouted to the people to keep away, and they scattered about in all directions. I had myself to look to a place of safety, and as soon as I had got clear the van third mounted the buffers on to the platform, and knocked the Inspector's cabin down.

## *Conclusion.*

The circumstances under which this unfortunate accident occurred are fairly clear, although the evidence, as regards details of the events leading up to it, is, on some points, very conflicting.

At about 5.18 p.m. pilot-engine No. 255 left Victoria station for Newtown sidings, to fetch the empty carriages which were intended to form the 6.27 p.m. train from Manchester to Oldham. The engine entered the sidings at Newtown No. 2 cabin at 5.19, according to the train book kept in that cabin, and at once went on to the turntable, to be turned; after which, having taken water, it proceeded to No. 6 road, where some vehicles were moved, and then it went to the empty carriage train referred to above. Nine carriages were standing on No. 3 siding road, but only seven were required on this occasion, and the engine took six away to put two of them into No. 6 road; and porter Crossley, who was directing the shunting operations, says he went to the brake-van at the lower end of the train and screwed the brake hard on—to hold the three carriages which they were leaving on No. 3 road. The sidings are, as described above, on a steep gradient falling from Newtown No. 2 cabin to No. 1 cabin and Victoria station, and the engine was, it must be remembered, at the upper end of the train. When the engine, etc., returned to No. 3 road the men found that the vehicles left there had gone.

It would appear that it was customary for two young boys, employed as train-bookers at Newtown No. 1 and No. 2 cabins, respectively, to go to Victoria station on completing their daily tour of duty, riding in the brake van of the empty carriage train. On this occasion they left the cabins at about 5.48 or 5.50, to join the train in the sidings, and as soon as the second boy (Antrobus) got into the van he began to light the lamp which had to be fixed there as a head light, *i.e.*, at the leading end of the train, when it was being propelled from the sidings to the station. By the time the lamp was lighted and fixed in the proper place, the starting signal had been taken off for the train to proceed to the station, and the other boy (Bateson) released the brake in the van—no doubt honestly believing the engine to be on the train, although such was not the case. The three carriages at once began to move, and running out on to the up south main line they went on, gaining speed as they proceeded, until, on entering No. 3 bay platform line in the station, the speed is estimated to have been from 30 to 40 miles an hour. At the inner end of the platform they ran into the buffer-stops with sufficient force to demolish the stops, and to cause the leading vehicles to mount on to the platform, with the fatal results already detailed. The distance from the buffer-stops to the point in the sidings at which the vehicles started is 990 yards.

So far as the boys are concerned, being little over 14 years of age and having only been in the Company's service nine weeks, there is not much more which need be said. They were told by the signalmen to ride in the brake-van, and the shunters raised no objection to their doing so, but Antrobus admits he had been told that he was not to touch anything in the van without the shunter's permission. Rule 20, quoted above, would seem to forbid the boys to ride in the van, although they have evidently done so for some time past, but I understand there is some doubt whether the rule was intended to apply to empty carriage trains ; the accident is a striking illustration of the danger of allowing anyone in a brake-van but the guard, or other person actually responsible for the management of the brake, etc., and I think it is most desirable any doubt on the subject should be removed, and that the rule should be rigidly enforced in all cases.

There are discrepancies in the evidence of the two boys, but as I am informed that Antrobus has told different stories when under examination by the Company's officers, by the Coroner, and by myself, I have no hesitation in accepting Bateson's version of what occurred as being the more reliable.

The circumstances under which the starting signal was lowered, and the road made for the train to come out, seem to be as follows :—The train leaves the sidings at Newtown No. 1 cabin, and signalman Jones, who was on duty at the time, says he waits for an intimation from the driver or shunter that the train is ready, before he takes any steps to let it out. As the train, in coming out, has to pass from the down or north side across three main lines to the up line on the south side of the railway, it hardly seems likely a signalman would set the through road sooner than necessary—for, by so doing, he would block all the lines into and out of the station—and until the through road is made the starting signal cannot, of course, be pulled off. Jones says that about 5.50 he heard three whistles and a crow given by an engine, which was the usual signal to him of the train being ready, that he heard the guard's whistle, and also saw what he took to be the guard signalling to him. He then offered the train at once to the next cabin, Millgate, and when it was accepted, at 5.52, he pulled over the necessary point levers and lowered the starting signal. He has been employed for a year past at this cabin, and must therefore be well acquainted with the place and the mode of working.

Jones may no doubt have heard the shunter whistling during the shunting operations which were going on, but I find it difficult to understand how he could have thought the shunter was calling or signalling to him, for the former must, at the time, have been quite at the other end of the sidings, and nowhere near the place where his van would be likely to be. Then, again, it seems to be quite clear the driver had not given "three whistles and a crow," no occasion having arisen for him to do so ; but at about 5.49 the engine of a down train, on the main line, gave three whistles (without a crow), when near Newtown No. 2 cabin, which may have been heard by Jones at No. 1 cabin. The two cabins are only 418 yards apart. I am, therefore, obliged to come to the conclusion that signalman Jones did not exercise as much care as he should have done, to make sure of the facts before he pulled off his signal, while there must necessarily be some doubt whether his account of what occurred is altogether reliable. He was evidently in a great hurry to get the empty train away, for the signalman in No. 2 cabin says he was twice asked by Jones whether the pilot engine was ready, *i.e.*, engine No. 255. The evidence also brings out an irregularity in block working, as it appears that although up trains passed No. 1 cabin on the north line at 5.48, and on the south line at 5.49, Jones did not clear those lines, to the cabin in rear (No. 2), until after the accident.

It seems to me to be very necessary that something should be done to ensure better information being given to the signalman. It is, to say the least of it, confusing to have to take action sometimes on whistles given by a driver, at other times on receipt of a whistle by the guard, or on a combination of both. If arrangements cannot be made to enable the shunter to ring a bell in the cabin, or to speak to the cabin on a telephone, the man ought, in my opinion, to go to the cabin and give verbal instructions. The latter course would, no doubt, sometimes involve some delay, unless a shunter were appointed to superintend the work in the sidings, instead of the acting guard, which would be a further improvement on the present arrangements.

Porter Crossley was, as already stated, acting as shunter on this occasion, and he would have accompanied the empty train to the station—as acting guard. I do not think any importance need be attached to the point referred to by the boys, that Crossley has not ridden in the front brake-van so regularly as the man whom he relieved in the duty a few weeks ago. This simply depends upon the position of the engine ; when the engine propels the train, the shunter rides in the leading van ; if the engine draws the train to the station, he rides in the rear van. Crossley is not a man of very long service (railway), but he must have been fully alive to the fact that the boys ought not at any time to have taken any part in the working of the train. To what extent he had allowed them to assist him on previous occasions, is not satisfactorily established in my opinion, for boy Antrobus has made different statements in that respect (among others), but I see no strong reason to doubt Crossley's evidence, and, if it be correct, his fault is rather that he was too easy going than that he intentionally broke the rules or neglected his duty.

Another point that must be mentioned is the practice which has prevailed of the engine pushing, instead of pulling, the train from the sidings to the station. This, again, would seem to be contrary to the Company's rules, for the sidings can hardly be considered to be "within station limits," and, on such gradients, it is specially objectionable even though the vacuum brake be available on the empty carriage trains. Prior to the date on which my enquiry was held, orders had been issued to discontinue the former practice in this respect.

I may add that I do not think it would be reasonable to expect the signalmen to have done anything, after the carriages had once run away, to avert the collision which ensued.

I have, &c.,
G. W. Addison,
*Lieut.-Col.*, *R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

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Printed copies of the above Report were sent to the Company on the 2nd December.

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## LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.,
September 1st, 1897.

Sir,

I have the honour to report for the information of the Board of Trade, in compliance with the Order of the 3rd August, the result of my enquiry into the accident that occurred at 11.18 a.m. on the 2nd idem at Buxton station on the London and North-Western Railway.

In this case, as the mineral train leaving Hindlow for Heaton Norris at 11.10 a.m. was descending the incline between the former place and Buxton, the driver lost control of it, and it ran past the signals into the bay line of Buxton station, demolishing the buffer stops at the end of the bay, and wrecking a portion of the station buildings, viz., foot-warmer room, lavatory and porters' room, before it came to rest.

An unfortunate passenger who was in one of the w.c.'s of the lavatory was crushed to death, and a porter who was in the porters' room was bruised and shaken. The driver jumped off the engine on to the ballast just before the collision, and was badly shaken, while the fireman, who got on to the platform, escaped uninjured.

The train consisted of a six-wheels-coupled coal engine, six-wheeled tender (with the steam brake on all the wheels of engine and tender), twenty-four mineral wagons loaded with lime and limestone, and a brake van.

The engine, tender, and two front wagons were badly damaged. (For details, *see* Appendix.)

### *Description.*

The direct line from Hindlow to Stockport, &c., which runs approximately from south to north, passes about 350 yards to the east of Buxton station, but there is a spur line into the station with a curvature towards the west of ten chains radius and less. The line from Hindlow to Stockport joins the line from Buxton to Stockport, &c., about 400 yards north of the station; these three lines, viz., that from Hindlow to Stockport, the spur line into the station, and that from Buxton to Stockport, forming a triangle, of which the sides are nearly equal. The points of the junction between the spur line and the Hindlow-Stockport line lie normally for the spur, and a few yards in advance (*i.e.*, on the Stockport side) of these points, there are facing points on the down line (*i.e.*, the line to Stockport), leading into a mineral loop line, which passes above the main lines from Buxton to Stockport by an overbridge, and joins the main down line again some distance to the north. The points leading into the mineral loop lie normally for the direct line, and there are the usual safety catch points in the loop.

There are, of course, numerous other connections giving access to sidings, besides cross-over roads, between the up and down lines.

Buxton is a terminal station, and has three platforms, which lie nearly due east and west, viz., an excursion platform, a main platform, and a bay platform, the last-named being on the easternmost side of the place. All the platforms are signalled for the arrival and departure of trains in the following manner :—The excursion platform for trains from or to Stockport; the main platform for trains from or to Stockport, or from or to Hindlow ; the bay platform for trains from or to Hindlow, &c.

The points and signals are worked from Buxton No. 2 signal cabin, which is situated alongside the spur line, a short distance outside (*i.e.*, east of) the bay platform. From the junction points of the spur line to the signal box the distance is 139 yards, and from the box to the end of the bay platform the distance is 204 yards. The bay line terminates in the usual manner with wooden buffer stops, behind which at a distance of 3 or 4 feet the station buildings commence. Nearest to the buffer stops was a room for heating foot warmers, then a lavatory containing w.c.'s and urinals, then a porters' room, and then the usual waiting rooms, booking offices, &c., &c.

The distance from Hindlow to Buxton station, *viâ* the spur line, already referred to, is rather more than 3½ miles, and there is a falling gradient nearly the whole way, the rates of inclination being :—

| | |
|---|---|
| Through Hindlow station ... ... ... | 1 in 200, falling towards Buxton. |
| From north end of Hindlow for half a mile ... | 1 in 60 ,, ,, ,, |
| For one mile ... ... ... ... ... ... | 1 in 330 ,, ,, ,, |
| For one mile and three-quarters ... ... | 1 in 62, falling towards Buxton. |
| For 300 yards... ... ... ... ... | Level. |
| For 60 yards ... ... ... ... ... | 1 in 330, rising towards Buxton. |
| For 170 yards... ... ... ... ... | 1 in 63, falling ,, ,, |
| For 90 yards (to end of bay platform) ... | 1 in 155 ,, ,, ,, |

The weights on the wheels of engine and tender were :—

| | | Tons. | cwt. | qrs. | Tons. | cwt. |
|---|---|---|---|---|---|---|
| Engine | Leading wheels ... ... ... | 10 | 6 | 0 | 29 | 11 |
| | Middle ,, ... ... ... | 10 | 0 | 0 | | |
| | Trailing ,, ... ... ... | 9 | 5 | 0 | | |
| Tender | Leading ,, ... ... ... | 9 | 5 | 2 | 25 | 0 |
| | Middle ,, ... ... ... | 9 | 0 | 0 | | |
| | Trailing ,, ... ... ... | 6 | 14 | 2 | | |
| | Total ... ... ... ... ... | | | | 54 | 11 |

All these wheels were braked.

There were 24 wagons on the train and a 10-ton van, and the actual weight of the train, exclusive of engine, tender and van, was 267 tons.

The following special rule, as to the working of goods and mineral trains on the Hindlow to Buxton incline and others, is printed in the Appendix to the working time book, and is in the possession of all the Company's servants :—

### GOODS AND MINERAL TRAINS DESCENDING HEAVY GRADIENTS.

"*Brakesmen must be careful to securely pin down sufficient breaks to enable Drivers to have complete control of their Trains when descending any of the gradients on the sections named in the following list, due regard being paid to the class of Engine, weight of the Train, and state of the weather. Drivers must give information to the Brakesmen to enable them to carry out this order :—*

*Hindlow to Buxton, &c., &c., &c.*"

The maximum load for an ordinary goods engine between Hindlow and Buxton is fixed at 30 loaded goods wagons, or 24 loaded mineral wagons, but "when a coal engine is used, two or three additional loaded mineral wagons may be taken."

### *Evidence.*

*Samuel Howard*, age 34, service 16 years, brakesman 13 years, states : On Monday, August 2nd, I commenced duty at Edgeley at 6.30 a.m., after a rest from previous Saturday at 5.0 p.m. On 2nd I worked the 7.0 a.m. goods train, Edgeley to Hindlow, and arrived at Higher Buxton at 11.10 a.m. ; my train was standing on the "up" main line, and I was in the signal box waiting for the "down" train to pass. Signalman Turner was on duty in the cabin. The cabin was switched out on arrival of my train, and "Turner" entered the cabin with me to "switch in" for my train to work there. I was in the cabin when the down train approached and "Turner" said to me : "This train," meaning the down train, "is coming rather fast." I went to the door and said, "Yes, he is, and he is not going to stop," meaning on the viaduct, to pick up the brakes ; that is the place for stopping for this purpose. When the engine was passing the box the driver put up his hand, which I understood to mean that he wanted a clear road at Buxton. The tender wheels were skidding, but I did not notice the engine wheels. I motioned to the driver with my hands that there was a train standing on the high level line. I think he understood me. The whistle was sounded when the driver reached the Buxton end of the platform, a long whistle. I then went down the cabin steps and gave brakesman Wall the same signal as I had given to the driver. The wheels of the van were skidding. I did not hear the driver give the danger whistle. I noticed the wagon brakes were down on about 10 wagons. I have always been able to stop my train at the signal on the viaduct when the signal has been at danger, but I have had cases where my train has not been pulled up at the usual place for unpinning brakes, but the signal has been already off for us. I have not reported any case of this kind. This has happened when the rails were wet and greasy, and not on a dry day with a good rail. On these occasions the load has been up to the maximum, and worked by tank engines. The maximum load is 24 loaded wagons for a goods engine, but two or three more may be taken if the engine is a coal engine. The brakes of the Buxton Lime Firms' wagons are generally not so effective, and not in such good condition as those of the L.N.W. Railway and other private owners' wagons. Those of the B.L.F. Co., fitted with iron blocks and with the same description of lever and quadrant as L. and N.W., are effective. I have not made any report as to the Buxton Lime Firms' brakes being inefficient. There is no fixed rule as to the number of brakes we have to pin down at Hindlow. It all depends on the class of brake available. Eight iron block brakes are as good as 15 or 20 ordinary brakes. We put down what we think is necessary, and then ascertain from the driver whether we have put down sufficient. If we put down too many the driver cannot start, and we should then have to take some off again, and we should then put some brakes on again, after the train was in motion. I know that the Midland Co. adopt 20-ton brake vans with six wheels, or else they put two 10-ton brake vans on their trains ; but I do not know what their limit of load may be, nor do I know what the gradients are. There is a considerable passenger traffic between Buxton and Stockport. Between Buxton and Dove Holes the distance is three miles, of rising incline. From Dove Holes past Chapel-en-le-Frith station to Whalley Bridge, for a distance of six miles, there is a down gradient. We have to stop mineral trains at Dove Holes to pin down brakes, and again at Whalley Bridge to take them off. I have known cases when it would not have been possible to stop at the signals outside Whalley Bridge, if they had been against my train. There are three classes of brakes on the B.L.F. Company's wagon : one is a rack brake, the second is a quadrant brake, in which a pin passes through one cheek of the quadrant to hold the lever down, but the pin in this type is liable to work out ; the third is similar to L.N.W. Co's pattern, with iron blocks, and the pin goes through both sides of the quadrant, and is not liable to work loose. Of the other traders' wagons working between Buxton and Stockport some are satisfactory, some are not. I should prefer to have better brakes on those wagons which are now fitted with brakes described above under headings 1 and 2. I should prefer a heavier brake van, with six wheels and iron brake blocks. The L.N.W. brakes, for the most part, have wooden blocks and four wheels.

*Walter Turner*, age 25, service a little over two years, signalman, states : On August 2nd, I commenced duty at 6.0 a.m. to work on the platform, or in the box, when required, till 6 p.m., having rested from about 4.0 p.m. on the previous Saturday. I arrived at Higher Buxton with brakesman Howard at 11.9 a.m., and went at once to the cabin to "switch in" the down train at that time being in the section. The down train passed the box at 11.15 a.m. I made no remark of any kind to brakesman Howard until after the train had passed the box, that is, the brake van had passed the box. I said to Howard "He is going a bit," but I did not consider the train was going faster than usual—many trains travel as fast, and some faster. I cannot say why I made this remark. The men in charge of the train made no sign or signal to indicate that the train was beyond control. I looked at the driver as he passed the cabin, and distinctly saw him, he was resting with his arms on the hand rail, and he touched his cap with his finger, as the drivers frequently do when passing the cabin. The whistle was not sounded at all. Howard was on the steps, and I was in the cabin. I do not know whether the engine brake was on or not, but some of the wagon brakes were down, but I cannot say whether they were holding. The van brake was on ; I saw smoke coming from the blocks. I have not heard any complaints from the men as to the condition of the Buxton Lime Firms' wagon brakes. There was nothing unusual about the train as it passed, and I had no doubt that it would be able to stop at the usual place on the viaduct. I cannot say what the speed was.

*George Goodwin*, age 31, ganger Permanent Way Department, service 14 years, states : On Monday, August 2nd, I commenced duty at 6.0 a.m., after resting from 4.0 p.m. on the previous Saturday. When the down train passed Higher Buxton I was under the platform and noticed it was not going at an unusual speed. I did not notice the brakes. I did not hear any whistle from the engine. I do not think the train was travelling at more than 12 to 14 miles an hour.

*Joseph Evelyn Pulpher*, age 20, states : I have rather more than three years' service. On Monday, 2nd August, I left Hindlow in the van of the 11.20 a.m. mineral train from Hindlow to Heaton Norris, with brakesman Wall, to weigh the wagons at Buxton. I was inside the brake van, and was not aware that the men had lost control of the train until we were on the viaduct, close to Buxton, when the brakesman said : "Come out, and be ready to jump, we are going down the platform line." I ran outside, and the train was then half-way past the Junction signals. I jumped on the ballast near No. 2 cabin, and did not fall down. I was somewhat shaken, but have not been off duty. The first time I noticed the brakesman apply his brake was near London Road Bridge. I am accustomed to travel with these mineral trains, and I did not notice that the train was travelling faster than usual, and I did not know that the men had lost control, until the brakesman informed me. I did not hear any whistling during the journey. I cannot say how many wagon brakes were down. I should think the speed when I jumped was about 8 or 10 miles an hour. I did not notice what the brakesman was doing while he was outside the van.

*James Pennington*, age 47, platelayer, states : On Monday, 2nd August, I commenced work at 6.0 a.m., after resting from 1.0 p.m. on Saturday. When the down mineral train passed I was acting as flagman for the down line, and was standing at the Higher Buxton end of the Dukes Drive viaduct. This would be about 2¾ miles from Hindlow. I was protecting men engaged in painting the rail angle irons on the viaduct. There was nothing unusual in the speed of the train when it passed, it was going nicely, not more than five or six miles an hour. I did not notice if the brake on the engine was on, but a good many wagon brakes were down on the six foot side. I cannot say how many; the van brake was on. The brakesman was at the wheel with his hand on the wheel. I did not hear any whistling from the engine. There was nothing whatever to make me think that the driver had lost control of his train.

*Stephen Wall*, age 39, states: I have been in the Company's service 11 years, and brakesman eight years. On Monday, August 2nd, I commenced duty at Edgeley at 5.0 a.m. to work till 2.36 p.m., after resting from 3.0 p.m. on the previous Saturday. I worked the 11.20 a.m. mineral train from Hindlow to Heaton Norris. Before starting from Hindlow, I pinned about 17 brakes down, which I considered sufficient; the levers of the other wagons were dropped but not pinned down. My train consisted of engine 2254 and tender, 24 mineral wagons loaded with lime and lime stone, and one brake van. Twenty-two of the wagons belonged to the Buxton Lime Firms Co. and the other two to Hannah Dean, Birkenhead. We left Hindlow at 11.10 a.m. with steam on and the van brake "off," as we usually do. The train travelled at the usual speed, and when arriving at London Road bridge I applied my brake, this being the usual mode of working. When the engine of my train was near the distant signal for Higher Buxton cabin, I noticed that the train snatched the brake, and I saw that instead of reducing speed we were gaining speed. I was not certain that things were going right at this time; and on passing through Higher Buxton station I was sure that the train was beyond control. At this time the brake in my van was hard on, and had been from London Road bridge. The wheels revolved and skidded alternately. This I regulated with my brake wheel. Brakesman Howard, who was on the ballast at Higher Buxton, motioned to me with his hands, but I did not understand his meaning. The weighman, Pulpher, was in my van, and as soon as I found the train was running into the bay line I told him to come out and prepare to jump. At this time the speed of the train was about seven or eight miles an hour. The train could not be pulled up, and the engine struck the stop block and entered the end of the building. The engine and tender ran beyond the rails, and the leading wheels of the first wagon were off the road, and the wagon was slightly damaged. All the other wagons kept the rails, and were not damaged. I dropped off the brake van on to the ballast when the engine of my train was about 40 yards from the buffer stop, the speed being about seven or eight miles an hour. I kept my feet and was not hurt. After the accident, I assisted generally, but did not examine my train for about an hour. On examination I found all the pins out of the quadrants and hanging down, except in one wagon, which had two iron brake blocks. I did not examine the brake blocks. Two of the wagons had "racks" for securing the brake levers. I have never failed to bring my train to a stand before this at the signals when they have been at danger. There have been cases where drivers have *drawn* forward on the high level when the signals have been off, instead of stopping at the usual place to pick up brakes, but I have not known a case, except this, where the train has got beyond control. I have been working over the line ever since it was opened, about three years ago. The brakes of the wagons belonging to the Buxton Lime Firms Co. are, as a rule, bad, and are not so effective as L. and N.W. brakes and other private owners, except the Sheepbridge Coal and Iron Co.'s wagons, which are also bad. I have not reported the brakes to any of my superior officers, but have mentioned the matter to Garlick, the Buxton Lime Firms Co.'s wagon examiner and repairer. The driver first whistled when he was just through Higher Buxton station the ordinary junction whistle. Then the driver gave about six short sharp whistles. He did not whistle again until he was under the gantry approaching No. 2 box at Buxton. I did not give any intimation to the signalman at Higher Buxton when passing that the train was beyond our control, my attention to brakesman Howard's hand signals prevented my doing so. We passed Higher Buxton at nine or ten miles an hour. The generality of the brakesmen have never been in the habit of complaining to the officers of the Company that the brakes on private wagons are inefficient. I think we ought to have drawn the Company's attention to the matter. It is a matter we should have taken up among the brakesmen generally. The general custom at the present time is to pin down what we regard as sufficient brakes at Hindlow. By the time the train reaches London Road bridge the driver has had sufficient opportunity to judge whether sufficient brakes are down or not. If the driver is not satisfied he can pull up on the 1 in 330 gradient to allow of more brakes being pinned down. If he had done so on the occasion in question, I could have gone round the wagons and secured more brakes, and I could have spragged some of the wheels if necessary. On this occasion the driver did not stop, and I had no idea that we were likely to lose control of the train till we reached Higher Buxton station. I was then certain that the train had got beyond our control. If we had been turned up the high level line, at the junction on the viaduct, all would have been right, as there is a rising gradient of 1 in 43. As soon as we reached the junction, and I found the engine took the bay line into Buxton station, I knew we should run into the stops. I then warned Pulpher to jump. I remained in my van till I saw the driver jump, and then did the same. We do not often find it necessary to stop at the bottom of the 1 in 330 incline, near London Road bridge, to put down more brakes. When I have complained to wagon examiner Garlick, as to the condition of the brakes on the B.L.F. Co.'s wagons, he has always answered that the brakes were for the purpose of keeping the wagons in the sidings, and not for use on the main line. I think we brakesmen generally ought to have taken up the question with the Railway Co. as to heavier brake vans, and we should have applied for heavier vans. I think it would be desirable to have heavier vans on these mineral trains. If the brakes on the private wagons were as good as those on the L.N.W. wagons, I still think it would be better to have heavier vans. My brake van was a four-wheeled van weighing 10 tons 10 cwt., with wooden blocks on the brake. I prefer iron blocks.

*Mathew Lomas*, driver, states: I have been in the service 29 years—driver for 23 years. On Aug. 2nd I came on duty at 5.0 a.m. to work till about 8.0 p.m., having rested from 6.0 p.m. the previous Friday—I have acted as driver 23 years. We backed on to 24 wagons of lime and brake-van at Hindlow, and I noticed the brakesman pinned down some brakes on each side of the train, but I cannot say how many. At about 11.0 a.m. I received a signal from the brakesman to start, and I did so. We proceeded all right, and on sighting the signals at Higher Buxton found they were off. I shut off steam on approaching London Road Bridge. My mate applied the hand-brake soon after this. When my engine got to the Higher Buxton distant signal I found that the wagons were pushing my engine, and I realised that the train was beyond my control. I applied the steam-brake on my engine, and reversed when passing through the station at Higher Buxton. I noticed brakesman Howard on the steps of the signal-box ; I raised my right arm and pointed in the direction of Buxton, and intended thus to call the attention of the signalman at the junction. I did not notice any return signal or acknowledgment from brakesman Howard. I then told my fireman to whistle, and he gave the ordinary junction whistles. On approaching the junction I saw the signals were all at danger, and the points set for the bay line. Having done all that was possible I jumped from the engine on to the ballast when about 20 yards from the buffer-stops. My train did not come to a stand until the engine had run into the stop-block and buildings. I was badly shaken, and am still unfit for duty. All the brakesmen complain of the condition of the brakes of the wagons belonging to the Buxton Lime Firms Company. I have never before worked a full load of mineral wagons from Hindlow to Buxton, the heaviest load I remember consisted of 18 wagons. I have been working trains regularly on this district for 18 months. My engine was No. 2254, coal engine, six wheels coupled, 4 feet 3 inches in diameter, with steam brake acting on all the wheels of engine and tender. This is not my regular engine, but I have driven the engine on several occasions previously. If I had not been satisfied with the number of brakes pinned down, I could have stopped near London Road Bridge and had more brakes put down. I have to trust to the brakesman as to how many brakes have been put down. It is not possible to leave my engine to examine the brakes, and see for myself how many are down. It is my experience that the pins of some of the wagons work out. Some wagons are better than others in this respect. If the pins come out the brake is nearly useless. In dry weather wooden blocks wear away quicker than iron blocks. Wooden blocks get hot and burn in such weather. As a driver I should like to have more brake power in the van, this would give us more assistance. If the weather is bad it is my custom to tell the brakesman to put more brakes down. I can generally tell when pulling out of Hindlow whether we have enough brakes down or not. The brakesman generally goes round the train on both sides, and in so doing passes by the engine. I think this accident was due to pins on the wagon brakes working out of the quadrants.

*James Massey* states: I have been in the service 13 years, and eight years fireman. I came on duty on Aug. 2nd at 5.0 a.m. to work till about 3.30 p.m., having booked off at 9.0 p.m. on the previous day (Sunday), having been on duty from 2.15 p.m. that day. At about 11.10 a.m. the engine was backed on to the train at Hindlow, and the signal was given by the brakesman to start. Everything went right until nearing the Higher Buxton distant signal, when I thought the train was getting beyond control. The hand-brake was on and the driver at once put on the steam-brake. It appeared to have some little effect, but not much. The speed did not appear to increase much until sighting the signals at No. 2 box, which were at danger. My mate then reversed his engine, and we passed the signal on to the bay line. I jumped on to the platform when my engine got to it, and the train ran forward into the buffer-stops and building. I was not hurt and kept my feet after jumping. I opened the whistle at Higher Buxton, hoping to get the signalman's attention at No. 2 box. The driver did not tell me do this. I also whistled in the cutting and on approaching the signals at No. 2. The engine was running chimney in front. My driver shut off steam just before reaching London Road Bridge. I put on the hand-brake about two train lengths over the top of the bank. I think my driver put on the steam-brake when near the distant signal of Higher Buxton. I have heard my driver's statement read and I agree with it.

*William Fox*, age 30, service 13 years, signalman nine, states: On 2nd Aug. I commenced duty at 10.0 a.m. in No. 2 box, Buxton, after resting a week on leave. It is a 12-hour box. I am a relief signalman, and was employed at Buxton on the 2nd inst. I did not acknowledge the "Is line clear" for the 11.20 a.m. mineral train when it was first offered from Hindlow, at 10.35, as the passenger train was standing in the bay line, and other movements were being made which fouled the junction. I could not reverse the road. The passenger train left the bay line at 10.56 a.m., and I accepted the mineral train at 10.58 a.m. I had no intimation of any kind that the mineral train was beyond control until the engine of it passed the signals at my cabin, which were all at danger. I saw the train pass at a speed of about six miles per hour, and I quite thought it would be brought to a stand before reaching the buffer-stop. I did not hear any whistles until the engine had passed the signals at least 40 yards. Had I received an intimation of the train running away I could have turned it on to the high level. There was a good deal of dust flying from the train, shewing that some portion of the brakes were working. I did not notice the engine and van brakes. I have worked in No. 2 signal box since its opening frequently, and have never seen a runaway train before. The block signals for the goods train from Hindlow were as follows :— Is line clear, 10.58 a.m. ; train entering section, 11.7 a.m. ; train arrived, 11.16 or 11.17. When the levers in the box are in their normal position No. 22 points lie for the station. In my opinion I think it would be better if No. 22 points lay normally for the overhead line.

## *Conclusion.*

Accidents of this nature, namely, the running away of mineral trains on steep inclines, bear a close resemblance to each other, being generally due to the omission to pin down sufficient wagon brakes, and the disaster referred to in this report is one of the usual type.

The train when it started from Hindlow consisted of engine, tender, twenty-four loaded wagons (all but two of which belonged to the Buxton Lime Firms Company) and a brake van. The line from Hindlow towards Buxton is on a falling gradient of 1 in 60 for a distance of half a mile. The inclination then becomes 1 in 330 for a mile, and again changes to 1 in 62 up to the junction with the spur line leading into Buxton station, a distance of a mile and three-quarters. It was the duty of the brakesman and driver to communicate with each other before starting, and arrange between themselves, after taking into consideration the composition of the train, condition of the rails, &c., how many wagon brakes should be pinned down, but both men acknowledge that they omitted to comply with this important instruction.

Brakesman Wall says that before leaving Hindlow he pinned down the brakes of *about* 17 wagons, and that the levers of the other wagons were dropped, but not pinned. Driver Lomas, without making any enquiry as to the weight of the train or the number of brakes put down, started away as soon as he got the signal to do so. All seems to have been right till he reached London Road Bridge, which is on the top of the incline of 1 in 62, about half way between Hindlow and Buxton, when he discovered that the train had got out of control. He at once reversed his engine and did his best to stop, but was unable to do so. On passing through Higher Buxton station he endeavoured to convey by signs to the signalman there that he would be unable to stop at the junction, and required a clear road, but he apparently failed in his object. When he reached the junction at Buxton No. 2 signal box, all the signals were against him. After passing the junction he found that he was going into the bay line of Buxton station, and that the train was certain to collide with the buffer stops, whereupon he jumped off his engine and was followed by his fireman.

In the meantime brakesman Wall, having become aware that the train was running away, told weighman Pulpher, who was in the van with him, to jump off, and then did the same himself. In this way these men escaped unhurt, with the exception of driver Lomas, who was badly shaken by his leap on to the ballast.

The train then ran forward along the bay line, and the engine, after knocking down the buffer stops, mounted the platform and demolished a portion of the station buildings, which were situated behind the stops, with the fatal result already alluded to.

The speed of the train at the time of the collision does not appear to have exceeded six miles an hour, but owing to the falling gradient and weight of the train, the force of the impact, which was rather of the nature of a thrust than a blow, was evidently considerable.

The leading wheels of the foremost wagon were lifted up on to the débris of the buffer stops, but no other wagon wheels left the rails, and the permanent way was uninjured.

The distance from Hindlow to Buxton is four miles, and as the time occupied on its journey between the two places was ten minutes, the average speed of the train must have been not less than 24 miles an hour, which is very much greater than the driver admits. Brakesman Wall states that he pinned down the brakes of 17 wagons at Hindlow, and attempts to account for the accident by saying that the pins holding the brake levers in their places must have been shaken out during the journey. Such declarations are easy to make, but in the absence of any collateral evidence, I am unable to place much reliance on them.

Had Wall and Lomas been at any pains before starting to make sure that sufficient brakes were down, the explanation offered might have been accepted. But when men in responsible positions disregard reasonable precautions, which are specified in the rules, and based on common sense, and a disaster subsequently occurs, they can hardly expect much weight to be attached to an excuse such as that put forward by Wall.

The disaster was, I believe, due to an insufficient number of brakes having been pinned down in the first instance, and brakesman Wall and driver Lomas must be held jointly responsible for it. They had both been on duty for 6 hours 18 minutes at the time of the occurrence.

It is manifestly impossible for any hard and fast rule to be laid down by Railway Companies as to the number of brakes which should be pinned down on mineral trains when descending inclines, as so much depends on local circumstances, and there is no alternative but to leave the matter in the hands of the trainmen, who alone are in a position to judge what should be done in each case.

It was stated by some of the witnesses that the brakes on some of the wagons of the Buxton Lime Firms Company are of an antiquated type and inefficient design. I examined a few of the wagons belonging to this company, and am satisfied that the complaint is to a certain extent well founded. A certain number of the wagons have only one wheel braked out of four, the pin holding the brake lever down being so badly secured that it might possibly work loose during a journey. On the other hand, I saw wagons belonging to the same company fitted with the newest and best pattern of brake. I am unable to regard the fact that this company possesses a certain number of wagons with indifferent brakes as any extenuation of the men's fault. There is no evidence to show how many, if any, of the wagons in the train possessed the inferior description of brake, and even if Wall's statement as to the number of brakes pinned down by him be accepted as absolutely correct, it shows that he did not avail himself of the full amount of brake power at his disposal, as he only pinned down 17 out of 24 wagon brakes.

But although Wall's attempt to excuse himself fails for the reasons given, it must be admitted that the brakes on certain wagons belonging to the Buxton Lime Firms Company are of a most unsatisfactory description. It is now several years since a specification was drawn up by the Associated Railway Companies, with which all private owners' wagons built since that date have to comply. All wagons built under that specification are properly braked, and it would almost seem that the time has now arrived when Railway Companies might reasonably refuse to accept any private wagons, whether old or new, which are not supplied with a reliable brake. It may be difficult for one company alone to move in the matter, but if the Associated Companies took joint action, it can hardly be doubted that private owners would have to conform to their views. At any rate, those Railway Companies who have dealings with the Buxton Lime Firms Company would be well advised if they refused to permit to travel over their lines all those wagons which are fitted with inefficient brakes.

This accident shows that there is another matter which calls for consideration. Even supposing that the train men perform their duty with care in working the traffic down the steep gradients in the Buxton district, it has to be borne in mind that no man is infallible, and allowance has still to be made for mistakes, errors of judgment, and unforeseen emergencies. The mineral trains in this district, consisting as they may of as many as 27 loaded wagons, are provided only with one 10-ton brake van. The margin of safety afforded by one such van appears to be too small. The fact that serious accidents of the nature of that now under review, are not of frequent occurrence, speaks well for the manner in which the men as a rule perform their duties. But a runaway mineral train is a source of much danger, as is shewn by the present case, and every reasonable precaution should be taken to protect the public from the possible consequences of a mistake or a fault on the part of any of those engaged in working the traffic. I would therefore recommend that brake vans weighing not less than 20 tons, or better still, that two 10-ton brake vans each with a brakesman, should be always attached to mineral trains in districts where the gradients are bad.

In consequence of this accident, the Railway Company have decided to alter the normal position of the points at the junction between the down line from Hindlow to Stockport and the spur line into the station, so as to make them lie for the mineral loop line instead of for the station, as at present. This is a desirable change, and will, I hope, be carried out at once, the necessary alteration in the interlocking being, of course, attended to.

I have the honour, &c.,
H. A. YORKE.
*Lieut.-Col., R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

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## APPENDIX.

*Damage done to Steam Brake Coal Engine, No. 2254.*

Smoke box and door knocked in. Chimney broken. Buffer plank and buffers broken. Both leading horn blocks broken. All horn block stays bent. Two brake hanger studs broken, four studs bent. Two brake straps broken, all brake rods bent. Brake adjusting screw broken. Brake shaft and right-hand footstep bent. Ashpan bent. All sandpipes broken. Three cylinder taps broken and shaft bent. Left-hand sand rod bracket broken. Front and middle clothing plates bent. Both hand rails bent. Hopper broken off. Both panels damaged, and cab bent right-hand side. Platforms bent, both sides. Feed pipes broken. All coupling rods bent and valve slide box broken.

*Damage done to Tender, No. 553, attached to Engine 2254.*

Back of tender broken in. Coping broken at back of tender. One left-hand trailing buffer broken. Both life guards broken. Both footsteps and right-hand hand rail damaged. Both feed-pipes and stays broken.

*Damage to Wagon Stock.*

Buxton Lime Company's wagon, No. 411—One broken sole. Buxton Lime Company's wagon, No. 466—One broken sole. One broken head-stock. Two broken end mountings. Four broken end planks. Two corner plates bent. One sole end splintered.

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Printed copies of the above Report were sent to the Company on the 23rd September.

# LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade (Railway Department),
Richmond Terrace, Whitehall, London, S.W.,
December 24th, 1897.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 30th November, the result of my enquiry into the collision that occurred, at 5.16 p.m. on the 23rd idem, at Haughton station, on the Stafford and Shrewsbury section of the London and North-Western Railway.

In this case, as the 4.44 p.m. passenger train from Stafford to Shrewsbury was passing through Haughton it ran into a goods wagon, which, during some shunting operations, had been left standing on the down line. It was a very foggy evening, and the fogmen had been called out. The enginemen and passengers escaped unhurt, but brakesman A. Smith, who was returning to his home and travelling (not on duty) in the front van of the train, was bruised about the legs by the breakage of the woodwork of the left side of the vehicle.

The train consisted of engine, tender, and eight coaches, marshalled as follows: Brake van, third-class carriage, two composites, third-class carriage, brake van, composite, and brake van. It was fitted throughout with the vacuum brake.

The engine had its buffer-plank broken and buffers torn off, smoke-box door knocked in, front vacuum brake pipe broken, frame bent, and left-hand cylinder damaged, &c., &c.

The leading brake van had its left side entirely carried away, and all the other vehicles of the train were more or less smashed on the left-hand side, with the exception of the rear van.

The wagon with which the train had collided was of the ordinary low-sided description, and was only lightly loaded. It was completely demolished, the wreckage being thrown on to the ballast on the left side of the line, and one of its wheels was torn off its axle and jammed between the framing and the left leading wheel of the engine.

The train travelled for a distance of 330 yards after the collision before coming to rest. All the wheels of the engine, tender, and train remained on the rails, with the exception of the leading and middle wheels of the second vehicle from the engine.

The permanent way was not much injured, only 6 sleepers and 42 chairs being broken.

Full particulars of the damage to the engine and rolling stock will be found in the appendix.

## *Description.*

Haughton is an unimportant roadside station on the double line between Stafford and Shrewsbury. It has two platforms and a small goods yard at the back of the down platform on the south side of the railway. There is only one siding, which has trailing points on the down line 90 yards west of the end of the down platform, and there is a cross-over road between the up and down lines about the middle of the station. The place is signalled in the usual manner with distant, home, and starting signals in each direction, the signal box being situated at the eastern extremity of the up platform The line through the station and for a mile or more on either side of it is quite straight.

The wagon with which the train collided was standing upon the down line 140 yards beyond, *i.e.*, west of the siding points.

There is a falling gradient all the way from Haughton to Stafford, the rate of inclination being 1 in 159 for nearly two miles, then 1 in 303 for about a mile, and afterwards 1 in 227.

The following distances may be noted:—

| | Yards. |
|---|---|
| From the signal box to the down starting signal ... ... | 200 |
| „ „ „ „ spot where the wagon stood ... | 274 |
| „ „ „ „ siding points ... ... ... | 134 |

## *Evidence.*

*Thomas Wilkes*, driver of 4.44 p.m. passenger train, Stafford to Shrewsbury, 23rd November, states: My train, consisting of engine and tender No. 804, and equal to 8½ vehicles, left Stafford at 5.8 p.m. On approaching Haughton the distant signal was off, and also the home and starting signals. I did not see the signalman. After passing through the station I ran into some obstruction, which I afterwards found to be an open goods wagon which was standing about 80 yards from the platform. My train was travelling at about 50 miles an hour at the time.

The wagon was knocked to pieces and the buffer-plank smashed, and other damage was done to the engine. I was shaken and my mate was somewhat hurt. It was very foggy at the time, and I did not see the wagon until striking it. My regulator was open at the time of the collision. None of the passengers complained of injury so far as I know, but a goods guard who was riding in the front van was slightly hurt. When the wagon was struck the first time it ran ahead, and before my train was brought to a stand it was struck a second time. As soon as I felt the obstruction I shut the regulator and applied the vacuum brake full on, and brought the train to a stand after travelling 400 yards. One of the wagon wheels was wedged in between the framing of the engine and the left leading wheel. My engine did not leave the rails, but lurched a great deal before coming to a stand. I have been in the Company's service about 44 years, and I have been driver about 38 years. On the 23rd November I came on duty at 7.10 a.m. to work till about 6.45 p.m.

*Richard Price*, fireman to driver Wilkes, corroborates his driver's statement and says: I was looking ahead approaching the distant signal from Haughton Station, which was off. I had fired up previous to reaching this signal. The fogmen were out, but as the signals were off we did not run over any fog signals.

*F. W. Welch*, guard of the 4.44 p.m. passenger train, Stafford to Shrewsbury, 23rd November: My train left Stafford at 5.8 p.m., and consisted of engine and tender 804, brake van 416, third class 1310, compo. 1300, compo. 1146, third class 808, brake van 204, compo. 485, 42 feet; Camb. brake van 6; equal to 8½ vehicles. When passing Haughton Station I was engaged sorting parcels and waybills in my van, when I suddenly received a shock as though the vacuum brake had been applied suddenly, and then I felt a slight rebound as though it had been released, then another shock similar to the first, then I heard sounds of woodwork being broken up, and I then went to the window, when the train came to a stand. When I went to the window I saw a wagon on its end close to the side of my van, which was the rear vehicle of the train. I then got out of the van to see what had occurred, and told the passengers, who enquired what had happened, to keep their seats. I then went round the train and found that the second vehicle from the engine had the two leading pairs of wheels derailed, and the side of the brake van next to the engine was carried away, and that the engine was so damaged as to be unworkable, and that it had run into a goods wagon which had been left on the main line. It was very foggy at the time. I could only see a few yards ahead. None of the passengers complained of injury to me. After consultation with the other guard, he went forward to Gnosall, and I went back to Haughton station and met the station-master. I asked what he had been doing; he replied that he had forgotten that the wagon was on the main line. I then told both him and the signalman what had happened, and arranged with them to wire for the Stafford break-down gang. I also told him that the other guard had gone forward to Gnosall, and that he could arrange single line working as soon as possible, as the up line was clear. He did so. I then returned to my train and rendered all necessary assistance to the passengers, etc. At about 7.0 p.m. the passengers, parcels, etc., were transferred to the 4.45 p.m. train *ex* Stafford, and sent on to destinations. I have been in the Company's service 10½ years, and I have been brakesman for 8½ years. On 23rd November I came on duty at 12 mid-day to work till 5.30 p.m., unless I had been required for other duty. I was guard in charge of the 4.44 p.m. train from Stafford; I took this duty in place of the regular guard, who had to be relieved on account of delay due to the fog.

*J. Turner*, guard travelling in the middle van of the 4.44 p.m. passenger train, Stafford to Shrewsbury, 23rd November: When passing Haughton Station I felt a jerk as though the drawbar had been pulled out. I looked at the vacuum brake gauge and saw the finger go to zero, showing that it had been put hard on. I felt another jerk. I then heard rattling sounds, which proved to be the breaking of the woodwork of the vehicles. My train then came to a stand, and I got out of my van, No. 204, on the 6-foot side, and finding that the passengers were leaving the carriages, I requested them to keep clear of the up-line. I went to the engine and found it was disabled. I put fog signals down on the up-line, and after meeting the other guard, he told me that the up line was clear. I then told him to return to Haughton Station to arrange single-line working, and that I would go on to Gnosall. I then saw the brakesman who was riding in the front van. I told him I was going forward, and I left him in charge of the passengers. I got to Gnosall at 5.55 p.m. and gave information as to the accident, and found that the station-master was preparing the necessary forms for single-line working, which was carried out at once, and I returned to Haughton by a goods train which was at Gnosall when I arrived there. I heard from guard Welch that my train had run into a wagon which had been left on the main line, and that it was lying by the side of the rear van of my train. I have been in the Company's service about 29 years, and I have been guard about 23 years. I came on duty on the 23rd November at 11.40 a.m. to work till 10.40 p.m. It was very foggy and it was dark. I did not see the signals and I heard no fog signals. I was not hurt.

*A. Smith*, brakesman: I was riding in the front van of the 4.44 p.m. passenger train, Stafford to Shrewsbury, 23rd November, travelling home passenger. I was sitting on the seat the left-hand side of the van when passing Haughton Station. I felt a violent jerk, and got up and moved to the right-hand side of the van to open the door, but before I could do this I was caught by the woodwork of the left side of the van, which prevented me getting to the door. After the train came to a stand, I got out of the van on the left side through the damaged woodwork, and saw both guards, who arranged that I should assist in taking charge of the passengers, etc. I did this and remained until Turner returned from Gnosall. I was shaken, but not badly hurt. I was bruised about the legs. It was very foggy at the time. I heard the station-master tell driver Wilkes that he had told the brakesman of the goods train which had left the wagon that he would see it into the siding. I have been in the Company's service for 10 years.

*W. Platt*, driver of the 8.40 a.m. goods train, Shrewsbury to Stafford, 23rd November states: On arrival at Haughton Station at 4.31 p.m., which was 2¼ hours late, I came to a stand with my engine clear of the cross-over road, and when the brakesman had detached my engine and two wagons from the train, I went ahead and backed them through the cross-over road on to the down line, and brought my engine to a stand clear of the siding points on the down line. I then drew in to the yard, the two wagons still being attached to my engine. The brakesman attached a wagon to the front of my engine, and then went into another siding and pushed up two more wagons, which were attached to the one already attached to the front of my engine. The station-master was present attending to the points in the yard, while the brakesman attached the wagon in front. The station-master as we left the Haughton Goods Yard detached a wagon for Haughton, which was the leading wagon of the two originally detached from the train. We then drew out of the yard, and left the Haughton wagon which had been detached by the station-master on the down main line, and then went from the down main line to the up line, through the cross-over road, and tail-roped three wagons in front of my engine on to the train, then went through the cross-over road and backed on to the train ready for right away. We left Haughton at 4.54 p.m., on receiving a signal to do so from the brakesman. I saw the station-master put down the wagon-brake after uncoupling it in the yard. I did not hear him make any arrangement with the brakesman as to getting it back into the siding. We have always worked in this manner when leaving wagons for Haughton. I have been working through this station for 20 years. The wagon was a low-sided one. I have been in the Company's service about 26 years, and I have been driver about 15 years. On 23rd November I came on duty at 2 p.m. to work till 5.15 p.m., but I was late that night because of the fog.

*John Rees Morgan*, brakesman of the 8.40 a.m. goods train, Shrewsbury to Stafford, November 23rd, corroborates the driver's statement as to the shunting and dealing with the wagons at Haughton Station and states : After my train was made up and ready to leave, the station-master, who was near the engine of my train, told me that he would see to the wagon being got in to the sidings, and that I was to go right away with my train. I then gave the driver a signal to do so, and went back to my brake van and jumped in as it passed. The train left Haughton with 26 wagons and the brake van. It was very foggy at the time. I have been working goods trains through Haughton Station for about ten years, and have always left wagons for the station on the main line, as in this case. I have been in the Company's service 16 years, and I have been 10 years brakesman. On the 23rd November I came on duty at 8.25 a.m. to work till 7.25 p.m. I was brakesman in charge of the 8.40 a.m. local goods train from Shrewsbury to Stafford. We reached Haughton at 4.30, being 2 hours and 10 minutes late, the delay being due to fog.

*William Griffiths*, signalman at Haughton Station, November 23rd : I have been in the Company's service five years last October, and I have been 16 months signalman, all the time at Haughton. On 23rd November I came on duty at 6 a.m. to work till 6 p.m. The box is closed from 10.30 a.m. till 12.30 p.m., during which time I have to clean lamps, etc. The 8.40 a.m. goods train, Shrewsbury to Stafford, arrived at Haughton at 4.30 p.m., and I corroborate the driver's statement as to the shunting and dealing with the wagons that were detached and attached to the train, but I do not know what was done in the yard, as I could not see and had nothing to do with the work done there. When the engine drew out of the goods siding and I set the points for it to do so, I had no intimation from anyone that a wagon was detached and left on the down main line. I was not advised that a wagon had to be detached for this station on arrival of the train. It was very foggy and I could not see more than 12 yards. The goods train left at 4.54 p.m., and the station-master did not say anything to me about the wagon left on the down main line. I received "Is line clear ?" from S. U. Junction, Stafford, at 5.7 p.m., this was accepted at once—"Train on line" 5.8 p.m. I then got the train accepted by Gnosall and pulled all signals off for it. The train passed my box at 5.16 p.m. I knew that some wagons were detached from the up goods train, but I could not say how many. I did not enquire from the station-master before sending the "Obstruction removed" signal to Stafford as to whether all was clear. I blocked back to Stafford on the arrival of the goods train, and did not send the "Obstruction removed" signal until the train was standing complete on the up line. It is the practice sometimes to leave the wagons on the main line until the train is ready to leave for Stafford. Sometimes the wagons are run into the yard while the train is tail-roping on the main line. It is not the practice for any intimation to be given to me whether wagons for the siding are clear, nor is it my practice to ask for this information before accepting trains from Stafford. I sent the "Obstruction removed" signal to Stafford at 4.51 p.m., and I saw the station-master putting away the tail rope at the same time, I therefore assumed all was clear. He passed my box with the rope. After the accident I gave the "Obstruction danger" signal to Stafford, but I did not cancel the "Train on line" signal to Gnosall.

*George Head*, station-master, Haughton, states : I was on duty on November 23rd when the 8.40 a.m. goods train, Shrewsbury to Stafford, arrived at 4.31 p.m. I fully agree with the statement of driver Platt as to the shunting and dealing with the wagons, both on the main line and in the goods yard. It was very foggy on the day in question, and after assisting the brakesman with the tail rope when finally making up his train, I put the tail-rope away and forgot all about the wagon which I left on the down main line. We worked as usual on this occasion, and it is not the practice to wait for the assistance of the brakesman to clear the down main line when wagons are for the goods sidings at Haughton. There is no difficulty in getting wagons from the down main line in to the yard, as there is a falling gradient of 1 in 150. I did not tell the signalman that there was a wagon on the down main line, nor am I in the habit of doing so regularly. When he cannot see what is going on, as in this instance, I have told him when the operation was complete, and sometimes they come and see for themselves. I told the brakesman that I would put the wagon into the siding after his train had gone. I frequently had done this. I know Rules 185 and 186, but I failed to carry them out on this occasion. I have been in railway service for 40 years, and I have been station-master for 30 years. I have been at Haughton as station-master for 25 years. There was an up passenger train due to pass through Haughton at 6.32, and I was anxious to get the goods train out of the way, lest it should be delayed at Stafford Junction, and so delay the passenger train. After getting the goods train away, I went to light station lamps and attend to the booking-office, &c., and I entirely forgot the wagon. The collision occurred at 5.16 p.m. There is no porter to assist me. The staff consists of myself and signalman.

## *Conclusion.*

Although the personal injuries resulting from this collision were trifling, the case is one of much gravity, as under slightly different conditions a disaster would have occurred.

The facts are simple enough. An up goods train arrived at Haughton at 4.30 p.m. It had to leave one wagon in the goods yard at this place and pick up three others. The wagon to be left was the second one from the engine, and accordingly the engine and the two first wagons were uncoupled and went forward till they cleared the points of the cross-over road. They were then backed through the cross-over road on the down line till they were past the points of the siding on this line. The engine then went forward into the goods yard, the two wagons being still attached to it, and picked up three wagons, which were coupled on in front of it. At the same time the wagon which was to be left behind was uncoupled. The engine then backed out of the yard, with three wagons in front of it and two behind it. On reaching the down line the engine once again went forward with three wagons still in front and one behind, the other wagon which had been previously detached being left standing on the down line with the brakes on. It was intended, as soon as the engine, &c., had got out of the way, to let this wagon drop down into the siding by gravity, the gradient rendering this possible. The engine pushed the three wagons in front of it through the cross-over road on to the up line, again returned to the down line, and tail-roped the three wagons back on to the train. It then once again went through the cross-over road to the up line and backed on to its train ready to go away.

All these operations were performed under the direct superintendence of station-master Head, who himself detached the wagon for Haughton from the engine and put down the brakes on it before it was left on the down line. Head assisted in tail-roping the other three wagons on to the train, and when all the movements as described had been completed, he told the brakesman that he would see to the putting of the wagon that was left behind into the siding, and directed him to go away with his train. The up train therefore proceeded on its way to Stafford, the time then being 4.54 p.m. Station-master Head next put away the tail rope, and after this went to his office, forgetting all about the wagon that was left upon the down line.

Signalman Griffiths was aware that three wagons were to be picked up at Haughton, but he says that he was not told (although he probably was aware) that a wagon had to be left there, and he operated the points of the cross-over road and siding as required in obedience to the signals conveyed by whistle from the station-master. Before he permitted the engine to cross from the up to the down line he took the proper precaution, as laid down in the rules, to "block back" to Stafford, indicating thereby that the down line was occupied.

As soon as the engine of the goods train had backed on to its train ready to go away, and Griffiths saw the station-master putting away the tail rope, he assumed that the shunting operations were completed, and without asking any one whether the down line was clear or not, he sent the "Obstruction removed" signal to Stafford. At 5.7 p.m. he received the "Is line clear?" block signal from Stafford for the 4.44 p.m. train, which was late. He "accepted" it at once, and received "Train on line" at 5.8. He at once offered the train to Gnosall signal-box, the next block post in the direction of Shrewsbury, and as soon as it was "accepted" he lowered all the down signals for it. It was very foggy at the time, and he could only see a few yards, and he took no steps to ascertain that the line was clear.

The train arrived at 5.16 p.m. with steam on, and travelling, according to the driver's statement, at 50 miles an hour, and directly after passing through the station it ran into the wagon which had been left on the down line by the station-master half an hour previously. The driver saw nothing of the obstacle until the engine struck it. As soon as he felt the shock he closed his regulator and applied his vacuum brake. The first blow forced the wagon forwards a few yards, but the train overtook it and struck it a second time. The wagon seems then to have been thrown off the line to the left, where the wreckage of it remained leaning against the face of the cutting through which the line here passes. In this position one of the wheels was torn off its axle by the engine of the express, while some portions of it fouled the line sufficiently to destroy the side of the leading brake van, and to smash the doors and panelling of all the carriages except the rear van. The engine travelled 330 yards from the point of collision before coming to rest, which seems to indicate that the speed of the train was very high, or else that the brake-pipe in front of the engine was not broken by the first impact. The results of the collision have already been described, and it is a remarkable fact that these were comparatively unimportant. Had the wagon been heavily loaded, or had two or three vehicles been left in place of one, the consequences would undoubtedly have been extremely serious.

From the above narrative the cause of the collision is made perfectly clear. Station-master Head, who gave his evidence truthfully and without any attempt to screen himself, acknowledged that he had taken charge of the shunting operations, that he had given no information to the signalman about the wagon, and that he had entirely forgotten all about it. Head is a very old servant of the Company, having been with them for 40 years, during the last 25 of which he has been station-master at Haughton, and it is with much regret that I have to report that the responsibility for this collision rests upon him. His error appears to have been due to simple failure of memory, rather than to actual negligence, but if, in place of relying solely on himself, he had obeyed the rules and informed the signalman that a wagon had been left on the down line, it is probable that the collision would not have occurred.

At the same time it is not possible altogether to absolve signalman Griffiths from remissness. He acted correctly in "blocking back" to Stafford when the shunting operations on the down line began, but he was in error in cancelling that signal without first ascertaining by enquiry from the station-master or brakesman whether the shunting was completed; and having regard to the fact that it was a foggy evening, he should certainly not have accepted the express and lowered his signals until he had made sure that the down line was clear.

Griffiths has only been a signalman for 16 months, but his experience should have been sufficient to have taught him that in railway working safety depends upon a strict adherence to rules. He had been on duty 11¼ hours at the time of the collision.

It has already been pointed out that the line falls at a fairly steep inclination all the way from Haughton to Stafford. This incident has drawn attention to the practice that had grown up at Haughton of permitting wagons to be dropped into the sidings by gravity, without any precaution being taken to ensure that they would not run back to Stafford in case of a mistake being made in the movement of the siding points. The Company have now issued instructions that the engine of a goods train which has shunting to do here similar to that described in this report, is to remain upon the down line on the east side of the siding points till all the wagons that have to be left behind are safely in the goods yard. But, as a further precaution, runaway catch-points would seem to be necessary a full train's length in rear of the down home signal, and I would recommend the Company to provide them.

I have, &c.,
H. A. YORKE,
*Lieut.-Col., R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

## APPENDIX.

### PARTICULARS OF DAMAGE DONE TO ENGINE 804.

Buffer-plank broken and two buffers missing; Gedges hook broken and screw-coupling missing; four buffer-plank angle irons damaged; buffer-plank back plate bent; framing, front end, right and left sides slightly bent; outside framing angle iron, left side damaged; smoke-box door knocked in; left driving sand box knocked in; left-hand footstep damaged; left-hand cylinder front cover broken; left-hand cylinder cover oil cup missing; leading cast-iron swan neck of vacuum pipe broken; vacuum pipes defective.

Tender.—One horn-plate damaged; one tank handle damaged.

### PARTICULARS OF DAMAGE TO STOCK.

485 Composite.—Door hinges bent, door panels and bottom quarter panels grazed on one side of carriage; one door pillar broken.

1146 Composite.—One end quarter and corner damaged; door hinges bent, door panels and bottom quarter panels grazed, on one side of carriage; ascending handles, buffer-rods, and draw-bars bent.

1300 Composite.—One end damaged, corner pillars broken, door hinges bent; door panels, bottom quarter panels, stepboards, one axle box broken, on one side of carriage.

1310 Third class.—Two doors broken at the top, cant rail split; top panels broken, door hinges bent, door panels and bottom quarter panels grazed, on one side of carriage; stepboards and quarter lights broken, and underframe grazed.

808 Third class.—Door hinges bent, door and bottom panels grazed, on one side of carriage; one corner pillar and two door pillars, broken.

416 Brake van.—One side, with guard's ogee, and doors, and one end carried away completely; the other end and roof damaged.

204 Brake van.—Door hinges bent, door and bottom quarter panels grazed, on one side of carriage; also guard's ogee grazed.

Goods Wagon.—Broken up.

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Printed copies of the above Report were sent to the Company on the 14th January, 1898.

# LONDON AND NORTH-WESTERN AND GREAT WESTERN JOINT RAILWAY.

Board of Trade (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.,
September 23rd, 1897.

SIR,

I HAVE the honour to report for the information of the Board of Trade, in compliance with the Order of the 11th August, the result of my enquiry into the collision that occurred at 4.46 a.m. on the 31st July, at Sutton Bridge signal box, near Shrewsbury, on the London and North-Western and Great Western Joint Railway.

In this case, as the 3.0 a.m. passenger train, consisting of engine, tender and five carriages, from Hereford to Shrewsbury, was approaching Sutton Bridge Junction, it came into collision with the rear van of a coal train, of 25 wagons and a van, which had nearly come to a stand at the home signal.

No passengers were hurt, but the driver and fireman of the passenger train were bruised and shaken.

The engine of the passenger train had its leading buffers and buffer plank broken, and the van and two hindmost wagons of the coal train had their axles bent.

No wheels left the rails, and no damage was done to the permanent way.

## *Description.*

This collision occurred on the line between Hereford and Shrewsbury, close to the up main home signal of the Sutton Bridge signal box, which is situated at the junctions of the Welshpool and Severn Valley lines with the main line.

The nearest box south of this on the main line is Bayston Hill, which is only used as a block post during the night, and is switched out during the day. Next to this, towards the south, is Condover station box, which is open both by day and night. The distance from Sutton Bridge to Bayston Hill is one mile 44 chains, and from Bayston Hill to Condover one mile and 72 chains.

The up main home signal of Sutton Bridge is placed on the proper side of the line, and covers the junctions, and its distant signal is 783 yards behind, *i.e.*, south of it.

The distance between the up home and up distant signals at Bayston Hill is 801 yards.

The line from Bayston Hill to Sutton Bridge is straight, with a gradient falling towards the latter of one in 127, and under ordinary atmospheric conditions the driver of an up train can obtain a good view of all the signals named.

## *Evidence.*

*William Evans*, signalman, stated: I have been in the Joint Companies' service for 25 years, and I have been signalman for 23 years. I am stationed at Sutton Bridge Junction box. I have been there all the time as signalman. It is an eight-hour box. I came on duty at 10 p.m. on the night of the 30th July to work until 6 a.m. on the 31st July. I gave the "line clear" signal for the London and North Western coal train to Bayston Hill box at 4.16 a.m. At 4.26 a.m. I got the "train on line" signal for it. It arrived at the home signal at 4.24 a.m. The signal was at danger. I had not asked "line clear" from Coleham signal box because I knew there was a train in section at the time. The coal train came to a stand at my home signal. The first I knew of the train having left Bayston Hill was seeing it standing at the signal. Prior to my seeing the train at the signal the man at Bayston Hill asked me on the single needle instrument if the train that he had signalled to me at 4.20 had arrived. I replied that the train he had asked "line clear" for at 4.16 was at my home signal. He immediately gave two rings on the bell, *i.e.*, "train entering section" signal. I pegged the block instrument over the "train on line." This was at 4.26. At 4.37 I got "line clear" from Coleham for the coal train, and I lowered my signal and let the train proceed towards Coleham for the purpose of being shunted. When the train was shunted on to the Severn Valley line I gave "train arrived" to Bayston Hill. This was at 4.42. I was at once asked "is line clear?" for a passenger train from Bayston Hill. I gave "line clear" at 4.42, and I got "train on line" at the same time. Directly afterwards, on looking up, I saw another up coal train approaching my box. I saw that a mistake had been made, and having a clear road to the box at Coleham, I lowered the signal for the second coal train to draw down, thinking, if I could get the train inside the home signal I should avert a collision. The train had not actually come to a stand, but was drawing down slowly to the signal, when the passenger train collided with it. I did not see the passenger train, and cannot say whether the driver had steam on, or what the speed was. When I received the "train entering section" signal from Bayston Hill at 4.26 I took it to refer to the train then standing at my home signal, although an enquiry had been made from Bayston Hill as to whether the train that he had put in section at 4.20 had arrived. I had received no signal as to "train entering section" at 4.20.

*William Baker*, signalman, stated: I have been in the Joint Companies' service about five years, and I have been signalman nearly three months. I am stationed in Bayston Hill signal box. This is a block box, and is switched out during the day. The box is opened every night, except Sunday, from 10 p.m. to 8 a.m., and on the night of 30th July I came on duty at 10 p.m. At 4.10 a.m. on the 31st I was asked "line clear" from Condover signal box fcr a London and North-Western coal train. I gave "line clear" at the same time. It passed me at 4.18. I had received "line clear" for it from Sutton Bridge at 4.17, and I had my signals off for the train when it arrived. I gave "train arrived" to Condover at 4.18. I gave "train entering section" for this train to Sutton Bridge at 4.18. I received "train arrived" from Sutton Bridge at 4.42, according to the entry in my train book. I had made a previous entry regarding this train at 4.25, after I had spoken on the speaking instrument to Sutton Bridge. At 4.20 I was asked "line clear" by Condover for another London and North-Western coal train. I accepted it at 4.20. I got the "train entering section" signal at the same time. I then went outside to fetch the home signal lamp in because it was daylight, and when I got back to my box the disc for the up line to Sutton Bridge cabin was showing "line clear." I then asked the signalman at Sutton Bridge on the needle instrument if the train for which I had given "train entering section" signal at 4.18 had arrived. He replied "train entering section at fourteen (or four ten) is here." I took this to mean 4.14, and thought it referred to the train I had signalled to him as entering the section at 4.18. I then lowered my signal for the second train, and gave "train entering section" signal to Sutton Bridge at 4.28, that being the time it passed my box. I have the second train entered in my book as arrived at Sutton Bridge at 4.42. I received the "is line clear?" signal for the passenger train from Condover at 4.40. I gave "line clear" at the same time. I got "train entering section" at 4.43, and it passed me at 4.45. I asked and received "line clear" from Sutton Bridge at 4.42 for it, and I gave "train entering section" at 4.45, and Sutton Bridge acknowledged this signal, and pegged the disc to "train on line" at the same time. At 4.47 I received the "obstruction danger" signal from Sutton Bridge, which signal was cancelled at 5.9. The object of my enquiry from Sutton Bridge box was to clear a doubt I had whether I had asked and received "line clear" in due course for the second coal train. The trains referred to are regular booked trains, but they were running late. Owing to Bank Holiday traffic the trains had got somewhat out of course on the night of the 30th.

*Samuel Latham*, driver, stated: I have been in the London and North-Western Company's service 27 years, and driver about 9 years. On 30th July I came on duty at 8.45 p.m. at Abergavenny. I was due to book off at 5 a.m. I was working the 10 p.m. coal train from Abergavenny to Crewe. This usually leaves at 2.45 a.m., but was put earlier on account of holiday traffic. My engine was a six-wheeled coupled coal engine, with six-wheeled tender, and the train consisted of 25 loaded coal waggons and the brake van. At Condover I was checked by signal, but before I came to a stand the signal was lowered for me. The distant for Bayston Hill was at danger when I sighted it, and when I passed it. When I came in sight of the home signal it was off. As I was approaching it the signal was put to danger in my face, and a hand signal to stop was also given me by the signalman. I went to the box to ask what was the matter. The signalman was engaged with telegraph instrument, and did not answer me at first. He then said "the line is clear," and I got on to the footplate to go. He lowered the signal for me, and shouted from the box, "be sharp, the mail is close to." I then left with my train. On arriving in view of the distant signal of Sutton Bridge Junction, it was at danger. It was very foggy there. The home signal was also at danger, and I was preparing to stop at this signal. As I was approaching it I felt a smash, and I stopped as soon as I could to ascertain the cause, and found that the mail had run into my train. As I was approaching the signal I saw them shunting a train out of my way in the section in front. Just as I felt the smash the home signal was lowered. The fog was thicker at the distant signal than at the home signal. It might be 80 to 100 yards from the home signal where the collision occurred. It was just getting nicely light. I was in the signal box at Bayston Hill nearly five minutes.

*William Dunning*, brakesman, stated: I have been in the London and North-Western Company's service for 20 years, and I have been brakesman 8 years. On the 30th July I came on duty at Abergavenny at 10 p.m., and I was due to book off after the arrival of my train at Crewe. It was due at 5 a.m. I was brakesman of a coal train from Abergavenny to Crewe, consisting of 25 waggons and brake van. It left Abergavenny at 10.30 p.m. On reaching Condover we were checked by signals, and the train was stopped by signal at Bayston Hill. I saw the distant signal, but I did not see the home signal till the train came to a stand. We stood there 10 minutes. I did not leave my van. When my van passed the Bayston Hill box the signalman did not shout to me. I did not know the mail was close behind me. When I approached Sutton Bridge Junction both distant and home signals were at danger. I did not see the home signal lowered. We were moving down the bank very slowly to the home signal, when I saw the engine of the mail train coming down the bank behind me. I jumped out of the van as quickly as I could. The engine of the mail collided with my van. None of the waggons were derailed, but the front end of the waggon of coal next to the van was lifted up with its buffers into the next waggon of coal. The tail lamp was lighted, but not the side lights. It was daylight at the time. There was a little fog in places. We were just getting out of the fog as we drew down the bank to Sutton Bridge. I saw the distant signal of Sutton Bridge Junction as soon as I left Bayston Hill, and I saw the home signal of Sutton Bridge before I got to the distant signal. I was not hurt when I jumped from the van. I saw the mail when it was 200 yards away from my van. I could not do anything to attract the driver's attention. I had no time. Shortly after the collision the whole of my train was drawn bodily to Coleham, where the two disabled waggons and my van were detached. When I first saw the mail it had not steam on. The driver of it appeared to be slackening speed. I think the mail may have been travelling 15 miles per hour about, when it struck my van.

*Thomas Chaplow*, driver, stated:—I have been in the London and North-Western Company's service since 1862, and I have been driver since 1869. On the 30th July I came on duty at 6.30 p.m. at Shrewsbury to work for about 10 hours 15 minutes. At 3.49 a.m., on the morning of the 31st I left Hereford with the three o'clock Bristol to

Shrewsbury express. On reaching Condover signal-box, the signals were all off for me, and so they were at Bayston Hill. After passing Bayston Hill, when I got into the cutting, I could not at first see the Sutton Bridge distant. I steadied my train by applying the vacuum break. I had already shut off steam at Condover, and had not re-applied it. When at last I saw the Sutton Bridge distant it was at danger. I was then right under it. After passing this, and just on reaching the River Bridge, I saw the home signal, and that was off. I blew my vacuum break off, and as I got into the cutting under the Potteries Railway, I sighted the van of the coal train in front of me. I was then 50 or 60 yards off it, as near as I can say. It was foggy all the way from Bayston Hill up to the time I sighted the distant signal for Sutton Bridge. After passing the distant signal, I was able to see the home signal over the top of the fog. It was a ground fog, and the view of the line was hidden by it. I fully expected to have a clear road into Shrewsbury, and was taken by surprise when I saw the train in front of me. My engine was No. 1520, four wheels coupled, passenger engine, and it was fitted with vacuum break apparatus and steam break on the engine and tender wheels. My train consisted of five vehicles. My engine had its buffer castings and buffer plank broken. I jumped off just at the moment of the collision, and a piece of coal flew off the tender and struck me in the back, and I have been off duty since. The fireman also jumped off and hurt his thigh. The speed when I just saw the train in front of me was about 30 to 35 miles per hour. I applied the breaks directly I saw the train, reversed the engine, and gave her steam, and I reduced the speed rapidly, and I think we struck the coal train at about 20 miles per hour. I was close to the distant signal of Sutton Bridge when I sighted it. I put the time of the collision at 4.45, my watch having stopped at that moment. I heard no complaints from passengers. No vehicle of my train left the rails. My train was delayed 20 to 23 minutes, and we then drew down into the station.

*Albert Edward Richards*, fireman, stated :—I have been in the London and North-Western Company's service seven years, and I have been five years fireman. On 30th July my hours of duty were the same as my driver's. I have heard my driver's statement read, and I corroborate, except, that I did not jump off the engine, but was thrown off by the collision. I was hurt on the groin, and have been off duty ever since.

*William Baker*, signalman, on being re-called, stated :—I pulled the home signal off for the second train, but I immediately afterwards put the signal to danger, because I was in doubt whether the section ahead was clear or not, and I then made the enquiry on the needle instrument from Sutton Bridge, which I have already explained. On getting the reply from Sutton Bridge I lowered my signal a second time. I saw the disc pegged to line clear after I returned to the box from fetching the lamp.

*Edwin Diggory*, passenger guard, stated :—I was guard of the 3 a.m. express train from Hereford to Crewe. After passing Bayston Hill, and when passing under the overbridge in the cutting on the Shrewsbury side of Bayston Hill, I saw the distant signal of Sutton Bridge junction at danger. It was misty. The mist was thick on the ground and clear above. I did not see the home signal. I did not see the train in front of my train until the collision occurred. I was thrown down at the time of the collision, but not hurt. I think the speed was about 18 to 20 miles an hour. No complaints were made to me by any passengers. When I saw the Sutton Bridge distant signal I should say I was 500 or 600 yards away from it.

## *Conclusion.*

This collision, which by good fortune was unattended by any personal injuries, was due to a blunder made by signalman William Baker in the Bayston Hill signal box.

It is not altogether clear what happened, but so far as I can gather the circumstances were somewhat as follows :—At 4.18 a.m. a (London and North-Western) coal train passed Bayston Hill towards Sutton Bridge. Signalman Baker asked and received " Line clear " for this train from Sutton Bridge, but he appears to have omitted to give the " Train entering section " signal for it at the proper time. At 4.20 a.m. Baker received the " Is line clear " message from Condover, the next block post towards the south, for a second coal train, which he at once accepted. He did not ask " Is line clear " for this second train from Sutton Bridge, but went out, according to his own statement, to fetch in a signal lamp. On his return to his box, he was in doubt whether he had or had not asked " Line clear " for the second train from Sutton Bridge, so he stopped the train at his home signal, and enquired by means of the needle telegraph instrument from the latter place, whether the first coal train had reached that place. On receipt of a reply in the affirmative he lowered his signals and allowed the second train to proceed, giving at the same time the " Train entering section " for it to Sutton Bridge. It will thus be seen that he had received the " Line clear " message from Sutton Bridge for the first coal train, but not for the second, and that he had given the " Train entering section " signal to Sutton Bridge for the second train but not for the first.

Turning now to Sutton Bridge signal box, signalman Evans, not having received the usual intimation (" Train entering section ") from Bayston Hill that the first coal train had left that place, was surprised at 4.24 to see that train standing at his home signal. Just at this moment the enquiry was made of him from Bayston Hill, whether the train had arrived, and he replied in the affirmative. Immediately after this, at 4.26, he received the " Train entering section " signal from Bayston Hill, which he (Evans) took as referring to the first train (*i.e.*, the one already at his signal) whereas, as explained above, it referred to the second train, of which Evans at that time knew nothing. There were therefore two coal trains in the section between Bayston Hill and Sutton Bridge, of which signalman Evans at the latter place was only aware of one.

At 4.42 Evans having disposed of the first train gave "Train out of section" signal to Bayston Hill, whereupon Baker, who took this signal as referring to the second train, at once asked "Is line clear" for the passenger train, which was then approaching his box from the south. Evans being still ignorant of the second coal train accepted the passenger train, and got "Train entering section" for it. Immediately afterwards, on looking up, he saw, not the passenger train as he expected, but the second coal train slowly approaching his home signal which was then at danger. Realizing, as he says, that a mistake had been made, he at once lowered his signal hoping that the coal train would get past it before the passenger train arrived, and that a collision would be averted. But before the coal train reached the signal the other train overtook and struck it. The speed of the latter is said to have been about 20 miles an hour at the time of the collision, and as the coal train was still on the move the shock of the impact was not severe. Brakesman Dunning saw the mail train approaching, when it was 200 yards off and at once jumped out of his van, and so escaped injury. The driver and fireman of the other train also jumped off, and sustained some slight injuries in so doing.

It is evident that the cause of the mishap is to be found in the faulty manner in which the block telegraph signals relating to the two coal trains were transmitted from Bayston Hill to Sutton Bridge. Baker by omitting the "Train entering section" signal for the first train and the "Is line clear" signal for the second, caused Evans to think that there was only one coal train to be dealt with instead of two and thus created the confusion, which, as might be expected, ended in a collision. Baker is a young hand at signalling, having only been so employed for three months, and his blunder was probably due to inexperience, and perhaps also in a certain degree to sleepiness, the time being 4.45 a.m.

Although the chief blame must rest with Baker, there is no doubt that Evans, who has 23 years' experience as signalman, might have cleared up the mistake and averted the collision, if he had taken a little more trouble to explain how matters stood when Baker made the enquiry on the telegraph instrument about the first coal train. Evans displayed extraordinary apathy or obtuseness in not pointing out to Baker that he (Baker) had not given the "Train entering section" signal for the (first) coal train, which had already arrived at Sutton Bridge, and again in assuming that the signal subsequently received by him applied to the first train, and not as he might have reasonably supposed, to a second one. It is, to say the least of it, disappointing to find a man of many years service so indifferent to the safety of the traffic, and although Evans did not actually cause the accident, some measure of responsibility in connection with it must rest upon him, inasmuch as he did absolutely nothing to guard against it.

Both these men had been on duty for 6¾ hours.

Driver Chaplow, of the passenger train, can hardly have been keeping a very sharp look out, or he should have been able to have seen the coal train in front of him at a much greater distance than (as he says) 50 or 60 yards. He excuses himself by saying that there was ground fog or mist, which interfered with his view, but this does not agree with brakesman Dunning's account, who saw the passenger train when it was 200 yards from him, and who had time to jump out of his van before the collision occurred. On the other hand, Chaplow, who, having seen the distant signal at danger, was preparing to stop at the Sutton Bridge home signal, may have been somewhat misled by seeing the latter signal drop, as he was approaching it, and I am therefore unwilling to charge him with carelessness.

A telephone is preferable as a means of communication between signalmen to the ordinary needle telegraph instrument, and, it may be that, had such existed at Bayston Hill and Sutton Bridge, the two men would have understood each other better. I believe the Companies are gradually introducing telephones into all the signal boxes on their joint lines.

I have, &c.,
H. A. YORKE,
*Lieut.-Col., R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

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**Printed copies of the above Report were sent to the Joint Companies on the 8th October.**

## LONDON AND SOUTH-WESTERN RAILWAY.

Railway Department, Board of Trade,
8, Richmond Terrace, Whitehall, London, S.W.,
26th July, 1897.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 19th inst., the result of my enquiry into the circumstances attending a collision which occurred on the 13th inst. at Yeovil Junction, on the London and South-Western Railway.

In this case the engine of the 6.40 p.m. passenger train from Yeovil Junction to Yeovil (a six-wheels-coupled tender engine, No. 690), when setting back to the train of six vehicles, which was standing at the platform on the centre line, failed to stop, and came into violent collision with the train at about 6.38 p.m.

No vehicle left the rails, but the train, which was a block, or short-buffered train, with the brakes on, was considerably damaged, being driven back for about 13 yards, and all the passengers remaining in the train, nine in number, were injured, four rather seriously.

For particulars of the damage to the rolling stock, *see* Appendix.

### *Description.*

At Yeovil Junction station, where the branch from Yeovil joins the main line at the east end of the station, there are two island platforms, with a central line between them, and up and down main lines outside them.

The central line is used principally for the arrival and departure of the branch trains.

The station signal cabin is at the east end of the station, and a little east of the signal cabin there is a cross-over road between the up main line and the central line.

Outside the up main line there is a group of up sidings, connected with the up main line by trailing points near the above-mentioned cross-over road.

The point of collision was opposite the station buildings on the up platform.

The distance from the point of collision to the point on the up main line where the engine commenced to set back through the cross-over road is 237 yards.

The following distances westward from the latter point should be noted :—

| | | |
|---|---|---|
| To cross-over road points on central line ... ... ... | 60 | yards. |
| „ a point on the up sidings where the engine of a goods train was standing ... ... ... ... ... ... | 100 | „ |
| „ the east end of the platform... ... ... ... ... | 121 | „ |
| „ the signal cabin ... ... ... ... ... ... | 125 | „ |
| „ the point of collision... ... ... ... ... ... | 237 | „ |

The line is level.

### *Evidence.*

*Henry Hann* states :—I was driver of engine No. 690. I am 36 years of age. I have been in the service about 20 years and have been driver four years last April. I commenced duty on the 13th July at 7.40 a.m. and worked on the Yeovil Branch during the day. I did shunting at Yeovil as required, taking charge of engine No. 690 at 3.0 p.m., and afterwards I worked the 3.55 p.m. train from Yeovil to Yeovil Junction, the 4.7 p.m. train from Yeovil Junction to Yeovil, the 5.15 p.m. train from Yeovil to Yeovil Junction, the 5.27 p.m. train from Yeovil Junction to Yeovil, and the 6.25 p.m. train from Yeovil to Yeovil Junction. I had two hours relief, from 1.0 p.m. to 3.0 p.m., for meals, and I finished duty at 7.40 p.m. I worked the 6.25 p.m. passenger train from Yeovil to Yeovil Junction with engine No. 690, running in on the middle line, and after detaching a passenger luggage van and attaching it to the 4.55 p.m. up train from Exeter at the rear, and after the departure of that train, I proceeded on the up line to the East Signal Box to back on to the 6.40 p.m. train standing in the middle road, to work that train to Yeovil. After passing over the cross-over road points at the east end of the station, I stopped and reversed the engine to come back through the cross-over road, and along the middle road. I gave the engine steam and on attempting to close the regulator again, found I was unable to do so. I applied the vacuum brake and my fireman went to the hand brake, but, finding that I was unable to stop the engine, both my fireman and I then attempted to reverse the engine, but were unable to move the reversing lever, and we collided with the stationary train at the rate of about 5 miles an hour. I experienced no difficulty with the engine previous to backing on to the 6.40 p.m. train at Yeovil Junction. After the collision I obtained the assistance of driver Nickels and we then succeeded in shutting the regulator. I did not sustain any injury. The engine No. 690 is a six-wheels-coupled goods engine with six-wheeled tender. It is fitted with a vacuum brake working blocks on all the engine and tender wheels. I came from Yeovil tender first, and would have gone back engine first. When setting back on to my train I was running tender first. The engine was in good order, and I had no trouble with it before during the day. It is a new engine, and I had not worked it before that day, when I took it over at 3.0 p.m., after it had brought a goods train in from London. The reversing lever in this engine is on the left hand side of the foot plate, and I have always been accustomed to one on the right hand side. The regulator had a double-headed handle and I have been used to a single one. I have always been accustomed to a steam brake on the engine. The brake had worked well during the day as at the time I was setting back I had 18″ of vacuum. When I applied steam to come back through the cross-over road, I think I had the regulator half open. When about half-way through the cross-over road, opposite the three-armed signal post, I tried to shut off steam but could not do so, although I put the regulator handle over to the shut position. I was then running at about 8 miles an hour, and when I found that steam was not shut off I tried to reverse the engine; that was when I was opposite to the signal cabin. I could not put the reversing lever over, although I had my shoulder against it, and my mate was helping me. I could get it over about 3 notches in back gear, but no further. I had put my vacuum brake on before I tried to reverse, destroying the whole of the vacuum. The brake took effect, but did not pull up the engine as it should have done, and I ran into the standing train at a speed of about 5 or 6 miles an hour. The engine was then pulling up fast. I took the engine into Yeovil after the accident and had no further trouble with the regulator or the reversing lever. I cannot explain what was the cause of the failure of the regulator to act. After the collision I was unable to close the regulator until assisted by driver Nickels. I was able to move the reversing lever after the collision.

*James Pickard* states :—I was fireman of engine No. 690. I am 26 years of age. I have been fireman 7 years and have been in the service about 12½ years. On July 13th I commenced duty at 5.10 a.m. and should have been off duty at 7.30 p.m.—I was off duty from 2.0 p.m. to 3.0 p.m. for meals. I began duty with Driver Hann on engine No. 690 at 3.0 p.m. I had previously worked to Salisbury with the 6.30 a.m. train, and back with the 11.50 a.m. train from Salisbury, arriving at Yeovil Junction about 1.25 p.m., and then took the same duty as Driver Hann. I corroborate my driver's statement in its entirety with regard to the cause of the collision. I did not sustain any injury.

*Frederick Down* states :—I am ticket collector at Yeovil. My age is 29 years. I have been in the service 11 years. In addition to my duties as ticket collector I have to act as guard of the branch train between Yeovil and Yeovil Junction every day. I commenced duty at 8.0 a.m. and finished at 7.15 p.m., with 1½ hours interval for meals. I took charge of the 6.25 p.m. train from Yeovil to Yeovil Junction, which was block train No. 43, and the formation of which was engine No. 690, passenger luggage van No. 290, van No. 140, third class coach No. 47, second class coach No. 228, first class coach No. 446, third No. 282, and van No. 205, the whole of which coaches were 4-wheel vehicles. On arrival at Yeovil Junction the passenger luggage van was detached, to be attached to the up train. The engine having done this was running round to come back on to the front of its train for Yeovil, and during this time I was assisting with the branch train, loading parcels and collecting tickets. Whilst collecting tickets I heard foreman Turner shouting, and immediately afterwards the engine collided with the train with considerable force. I am unable to say at what speed the engine was moving. There were, I think, 10 or 12 passengers in the train, most of them having got out of the up train. No vehicles left the rails. The 4 middle vehicles were a good deal damaged, and 9 people were injured. One passenger had jumped out before the collision. Four or five seemed to be badly injured. The train was driven back about 40 feet.

*James Maynard* states :—I am inspector at Yeovil Junction. I am 45 years of age and have been in the service 30 years, and I have held the position of inspector 9 years. The 6.25 p.m. train from Yeovil arrived at Yeovil Junction on the 13th July with a passenger luggage van next the engine, to be attached to the 4.55 p.m. up main line train. After this up train had left, engine No. 690 followed on the up road, and was crossed at the East end to the middle road to work the 6.40 p.m. train to Yeovil. The driver in backing on to the train seemed to have lost all control of his engine, and it came into violent collision with the stationary branch train, damaging the whole of the coaches and also injuring several passengers. Foreman Turner and I were standing on the up platform, near the up general waiting room, and seeing the engine coming back much too fast we shouted and held up our hands to the driver, who appeared unable to stop the engine. Our shouting caused one passenger to jump from the train before the engine struck it and he thus saved himself from injury. I consider that the engine struck the train at a speed of about 10 miles an hour. I did not examine the engine after the collision, but went to attend to the passengers. The driver made no statement to me. I think he was doing his best to stop the engine, and when it passed me about 60 feet from the place where it struck the train he and his fireman were both trying to push over the reversing lever. The lever was pointing in the direction the engine was running, and they were trying to push it back. I think steam was on. I cannot speak as to the brakes. No wheels were skidding.

*James Tupman* states :—I am signalman at Yeovil Junction East Box, and I am 31 years of age. I have been in the service 13 years and have been signalman about 6 years. I commenced duty on the 13th inst. at 10 a.m. and finished at 8.0 p.m., without interval for meals. After arrival of the 6.25 p.m. train from Yeovil at Yeovil Junction the engine attached a van to the 4.55 p.m. up main line train, and after the departure of that train followed it on the up road through the station till clear of the cross-over road points leading to the middle road. I set the road, and the engine came back. As the engine passed my box backing on to its train I considered it was proceeding faster than usual, which attracted my attention. I could not see what was happening on the engine, but I saw that a collision was inevitable and was powerless to avoid it. I could not see that steam was on, and I cannot speak as to the brakes. I could not see what the men on the engine were doing. The collision took place at 6.38 p.m., and the train was due to leave at 6.40 p.m.

*George Turner* states :—I am foreman porter at Yeovil Junction, and my age is 44 years. I have been in the service 26 years, and have been foreman porter about 20 years. I commenced duty at 6.0 p.m., and was off at 6.0 a.m. the following morning, with no stated interval for meals. I was in attendance on the 6.25 p.m. train from Yeovil on its arrival, and a van was detached from that train to go on the 4.55 p.m. up. After the departure of that train the engine ran on the up road to the East Signal Box to back on to its train standing in the middle road to leave for Yeovil at 6.40 p.m. I saw the engine coming back, and considered it was running too fast to stop. I shouted to the driver, "Steady on there," and seeing that they were not stopping, I continued to shout. As the engine passed me I saw the driver and fireman both trying to reverse the lever. Seeing the men were in difficulties, and would not be able to stop the engine, I shouted to passengers and others near the train to stand clear, and the engine immediately afterwards collided with the train with great force. I consider the engine was moving at the speed of about 10 miles an hour when it passed me. The force of the collision shifted the stationary train about two coach lengths, or about 40 feet.

*Alexander Abbott* states: I am locomotive foreman in charge of the running shed at Yeovil. I have been in the service for 42 years. Driver Hann is stationed at Yeovil, and is a very steady man. He is a spare man, and works on any engine which he may be detailed to. Engine No. 690 is a new engine belonging to Nine Elms, and was at Yeovil for the day only. It came in at 7.40 p.m., and was due to leave at 10.40 with a goods train for London. In the meantime it was employed in working the transit trains. It has been running here for three or four months. There is nothing unusual about the engine that I can see. It is a left-handed engine, and our engines have generally been right-handed. It has a double-handed regulator; but others of our engines have them. Any competent driver could have driven the engine. Driver Hann had not driven that engine before, but he had several times had one of a similar class. I saw the engine at Yeovil, and asked the driver who brought it down whether it was all right, and he said it was. There was no report against it. The engine was booked off "right." I examined it at Yeovil Junction about 20 minutes after the collision. The buffer between the engine and tender was slightly damaged, but there was nothing wrong anywhere else. Everything was in perfect order. The regulator was tried by me 20 or 30 times, and it worked quite right. I didn't try the reversing lever. It was put on and pulled back two or three times in my presence, and there was nothing wrong with it. I can only account for the accident by supposing that a little water from the boiler had got over the regulators, and brought a little grit with it, which got between the faces of the valve, so that the valve did not close properly. I can't see why the driver could not reverse his reversing lever. The boiler could not have been too full, as there was only 2 inches in the gauge glass when I got on to the engine. It may be that some water had got into the cylinders, which would make it difficult to reverse.

*Frederick Nickels* states: I have been 20 years in the service, and a driver since July 1891. On the 13th July I was on the siding at Yeovil Junction when the collision took place on the middle road. I had brought the 2.15 up goods train from Exeter, and was shunted on the siding at the east end of the station. I saw driver Hann setting back his engine on to the train standing on the middle road. I spoke to him as he passed, saying, "How do you do, Harry." His engine was then fair on the middle road, going back towards the train, having come through the cross-over road off the up line. I cannot say whether driver Hann heard me or not. I could not see that he was in any trouble at all with his engine. He was on the proper left side of the foot-plate, looking over the side. I should say he was going at 6 miles an hour. The speed was not unusual. I cannot say whether steam was on, nor can I speak as to the brakes. After the engine had passed I heard some shouting, and looking towards the station I saw the engine come into collision with the train. I came down to see what assistance I could give. I saw the engine standing outside the telegraph office. The steam was then coming through the cylinder cocks. The regulator was apparently shut, and I could not move the handle. The telegraph clerk complained of the noise of the steam coming out of the cylinder cocks, and the fireman went and shut them. I thought that would not do, so I suggested bringing the engine out clear of everything, and this was done. The driver then, at my suggestion, opened the regulator wide, and then shut it sharp, and that had the effect of shutting off steam properly. I then went back to my engine. I did not try the reversing lever at all. I have had no experience of that class of engine, so cannot explain what had happened. When I got to Hann's engine the reversing lever was in fore-gear.

## *Conclusion.*

This collision was one of rather an unusual character, but there is no dispute as to the facts of the case.

The 6.25 p.m. train from Yeovil to Yeovil Junction arrived at about 6.30 p.m. on the middle line, the engine (No. 690) being then tender in front. The same train had to go back to Yeovil at 6.40 p.m., and the engine had to run round to be attached to the other end of the train, going back engine in front.

The driver first took off a van, which had come from Yeovil next to the engine, attached it to an up train which was standing on the up main line, and, after the train had left, followed it for a distance of about 350 yards, stopped ahead of the points of a cross-over road leading on to the middle line, and came back through the cross-over road to get to his train.

He had to apply a little steam to start back, and put his engine in back gear, and he states that when he tried to shut off steam by closing the regulator he was unable to do so. He applied his vacuum brake, and his fireman the tender brake, and then, finding that he would not be able to stop in time, he tried to move the reversing lever into forward gear, but could not do so, although assisted by his fireman, and accordingly ran into the standing train at a speed which he estimates at 5 or 6 miles an hour, and an inspector and foreman porter, who were on the platform, at about 10 miles an hour.

There is no reason to doubt the truth of his story in the main, and it is to a great extent corroborated by the evidence of Driver Nickels, who was with his engine in the sidings. But on one point he is clearly wrong, for, though he says that he tried to close the regulator when coming through the cross-over road, Driver Nickels says that when he passed him, after coming through the cross-over road, he was in no difficulties with his engine ; and I expect that he did not try to shut his regulator entirely until he was within 130 yards or so of his train. There would have been no difficulty in pulling up in that distance if everything had gone right, but the failure of the regulator to act properly was, no doubt, very embarrassing ; and, although I think he might perhaps have averted the collision if he had been a little more prompt in applying his brakes, or if he had opened his regulator and shut it again sharply, I do not think that he should be held responsible for what occurred, but that the accident should be attributed to a failure of the regulator to act properly in the first instance.

The explanation given by the locomotive foreman as to the cause of this failure is, no doubt, correct, and was assented to by the Locomotive Superintendent of the Company, and it was due to some grit or other matter getting between the faces of the valve, so that, although the regulator handle was in the closed position, or nearly so, the valve was not properly closed.

The Locomotive Superintendent informs me that occasionally when a regulator is opened too suddenly the water follows the sudden rush of steam and is drawn up over the valve, bringing with it any grit which may be in the boiler, and then passing into the cylinders. When this is the case, steam is not completely shut off by the closing of the regulator, and there is, moreover, difficulty in moving the reversing lever, and he has warned his drivers to work the regulator handle cautiously when putting on steam.

There was nothing special in the construction of the engine to lead to the accident. The reversing lever was on the left-hand side, as it is on many, or even most, lines of railway, and as it will be in future on all the L.S.W. engines ; and the regulator handle was one to be worked with both hands instead of with one only ; but this is a very common and is probably a better pattern. The valve was of the usual pattern.

The engine, however, being a six-wheels-coupled tender engine, is not well suited for working these branch trains, which should be, and usually are—as I am informed—worked with tank engines.

Further than this I do not think it is at all a good practice to take these main line engines on their arrival at Yeovil, and put them in charge of a strange driver, to work the branch trains until the time when they are required to take the return train to London. Men always work better with an engine to which they are accustomed, and there ought to be sufficient engines at Yeovil to work the branch trains with their proper drivers.

I have the honour to be,
Sir,
Your obedient servant,
F. A. MARINDIN,
Major, R.E.

## APPENDIX.

### Damage to Rolling Stock.

No. 205, passenger brake van.—1 sole bar split, 1 angle iron casting, 1 crib rail, 1 door glass, and 1 middle bearer all broken, and 3 panels split.

No. 282, third class.—2 headstocks, 2 cross bearers, 1 sole bar, 1 diagonal body frame, 5 quarter lights, and 1 door glass all broken, partitions displaced and roof frame out of mortice.

No 446, first class.—2 sole bars, 1 door glass and 6 quarter lights all broken.

No. 228, second class.—5 door panels split, body frame and 5 quarter lights broken, and roof out of mortice.

No. 47, third class.—1 headstock split, roof frame out of mortice, partitions displaced, and 2 quarter lights broken.

No. 140, passenger brake van.—1 door glass broken.

**Printed copies of the above Report were sent to the Company on the 30th August.**

## LONDON AND SOUTH-WESTERN RAILWAY.

Board of Trade (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.,
September 8th, 1897.

SIR,

I HAVE the honour to report for the information of the Board of Trade, in compliance with the order of the 6th inst., the result of my enquiry into the causes of an accident which occurred on the 3rd inst., at Gunnersbury station, on the London and South-Western Railway.

In this case, when a special troop train from Aldershot to Fleetwood, *viâ* Kensington, arrived at Gunnersbury, on the up loop line, it was not brought to a stand at the East cabin home signals, which were at danger, but went forward into a short dead-end siding and came slightly into collision with the brick wing-wall of a bridge over the railway.

It is reported that no passengers and no servants of the Company were injured.

The train consisted of an eight-wheeled (four wheels coupled and leading bogie) tender-engine and 11 vehicles, fitted with the automatic vacuum brake. The bogie wheels of the engine left the rails, and the engine had left buffer broken, buffer beam bent, and the left-hand foot framing damaged ; the third and fourth coaches were buffer-locked ; and two iron posts, carrying the distant signals of Acton Lane and Bollo Lane cabins, were knocked over.

### *Description.*

At the east end of Gunnersbury station, the up loop line from Hounslow converges into the up main line from Richmond, and there are facing points on the main line of the junction for Acton or Hammersmith respectively. The up platform is between the main and loop lines, with the starting signals for both lines also in the angle between them. There are facing points on the loop line which give access to a short siding, and which are set so as to act as a trap to divert into the siding anything coming out of the loop line when the signals are lowered for a train on the main line ; this siding terminates within a few feet of the wing-wall of a bridge carrying a main road over the railway, at a very oblique angle, about 80 yards east of the platform.

The points and signals at this end of the station are worked from the east, or junction, signal cabin, which is situated on the east side of the road bridge, and from which cabin there is very little view of the up platform, and practically no view at all of the up loop line. The starting signals already referred to form the East cabin home signals, and they are arranged in the following way : On a high bracket post just at the foot of the platform ramp there are three arms ; the one on the right (as seen from up line trains) being for trains from the up main to Hammersmith ; the centre arm, which is rather lower than the other two, from the up main to Acton ; the arm on the left, from the up loop to Hammersmith. On a separate and lower post, close to the other, is the signal for proceeding from the up loop to Acton. These four signals are all duplicated, in two separate groups, on the platform under the station roof.

The up platform is on a curve to the right, and the lines are almost level.

The following distances may be noted, from the west end of the station eastwards :—

| | |
|---|---|
| To the up loop platform signals ... ... ... ... | 350 feet |
| „ high bracket post ... ... ... ... ... | 440 „ |
| „ end of short siding and over bridge ... ... | 680 „ |

There is another cabin west of the station, which controls the entrance of trains (up) from that end, but there is no necessity to go into any details regarding it or the signals worked from it.

### *Evidence.*

*John Pitt* states : I have been 38 years in the Company's service, and 29 years signalman at Gunnersbury. On September 3rd I came on duty at 2 p.m. to work until 12.30 a.m. on the 4th in the East cabin. The warning signal for the North London train from Richmond, due at Gunnersbury at 6.26, was given to me by the man in the West box about 6.25. I got "all clear" from Bollo Lane and lowered my signals, viz., the centre signal on the high post at the up end of the up main platform, the repeating signal on the platform, and the distant signal ; the train arrived in the station at 6.28. Before the arrival of the North London train, West box had notified to me a troop special train from Aldershot, for Kensington and Fleetwood—coming from Chiswick Junction on the loop line. This train I warned on to Acton Lane, but I lowered no signals for it. I saw the North London train come in, and I just sighted the special, but I could not see the latter again until it had run into the bridge. The North London train had not then left the platform, and I put the signal up against it at once. The signals have been in the same positions as at present since January, 1894, and I have never heard of the drivers finding any difficulty in distinguishing them. Nothing like what happened on this occasion had previously occurred to my knowledge.

*Arthur Bowring* states : I have been 18 years in the Company's service, seven years a signalman, and for a little over 12 months at Gunnersbury. On September 3rd I came on duty at 2 p.m. to work until 12.30 a.m. on the 4th in the West box. The North London train from Richmond passed my box at 6.28 on the up main line, and the troop special passed almost at the same time on the loop line. I had lowered my home and distant signals for the latter. I did not notice the train passing particularly, but it would be running at a low rate of speed. Both the main and loop lines had been "cleared" some minutes previously by the East box. I have never heard of drivers experiencing any difficulty in distinguishing the signals, and I am not aware of any mistake having been made previously.

*William Baker* states : I have been about 35 years in the Company's service, 23 years a driver. On the 3rd September I came on duty at 9.30 a.m. to work until about 7 p.m. My engine, No. 684, is a four-wheels-coupled, tender, engine with leading bogie—fitted with the automatic vacuum and steam brakes, and there is the usual hand brake on the tender. On the above date I left Aldershot (Government sidings) at 5.15 p.m. with a special troop train for Kensington, *en route* to Fleetwood. There were 11 vehicles behind the engine. Approaching the West end of Gunnersbury station the home signal was "off," but the East cabin distant was at danger when I passed it. The speed would be about four to five miles an hour as I ran alongside the loop line platform. Coming round the curve, before arriving at the station, I saw the centre one of the three high starting signals "off." That signal is the starting signal from the through or main line for North London trains *viâ* Acton, but it does not apply to trains on the loop line. I had a view of the signal all the way until I got to it. I do not think I had run through the station previously this year, but I am thoroughly acquainted with the signalling of the station. I did not notice the repeating signals on the platform—there are separate posts carrying the repeating signals for the main and loop lines. There is also a starting signal applicable to the road I was on for trains proceeding to Willesden *viâ* Acton, which was at danger. I did not see any train at the main line platform, and did not realize I had made a mistake until I saw the siding points just ahead of me. I could see I was wrong then, and I applied the automatic brakes immediately. I had shut off steam before I got to the West box. I just struck the bridge with the left leading buffer, and the engine bogie wheels left the rails to the right. The engine did not foul the main line. Neither I nor my mate was hurt at all. None of the wheels of the passenger vehicles left the metals, but the third and fourth vehicles were buffer-locked. It is a common custom of the London and South-Western Railway to have the signals for two parallel lines on one post, and I see no objection to this; our signals are generally quite clear. I made a mistake on this occasion.

*Arthur Virrow* states : I have been 15½ years in the Company's service, and a fireman nearly eight years. On the 3rd September I was firing for driver Baker, and my hours of work were the same as his. Approaching Gunnersbury, with the troop train, I noticed that the distant signal for the East box was "on," but I could not see the starting signals at the up end of the station from my side of the engine (the left-hand side). The speed running along the platform would be about four miles an hour. I thought we were all right, but I had seen no signal, until I saw the siding points were wrong. I was not hurt in any way. I never remember any similar occurrence either to my train or any other, and I have not heard any drivers complain of the signals at Gunnersbury.

*Augustus Carter* states : I have been station-master at Gunnersbury over 10 years. On the 3rd September I was on the bank, on the up side of the railway, looking out for the troop train. I thought she was running in very steadily, and the speed would be about four miles an hour. I noticed that the main line signal was "off," but the loop signals were at danger. I realized, perhaps a second or two before the engine was into the bridge, that they had gone too far, but there was then no time to give any warning to any of the trainmen. I quite thought they were going to stop at the proper place. I have never heard any complaints either as to the position or the arrangement of the signals, and they are, in my opinion, quite satisfactory.

## *Conclusion.*

This slight accident was due to a mistake made by driver Baker, who, seeing a signal lowered for a train on the main line, took that signal to be for his train to proceed from the loop line, on which he was running, to the main line, and thence to Hammersmith, &c. The signals applicable to the loop line were at the time at danger.

There are, as explained above, two up lines through the station, viz. : main and loop lines—which converge at the up or east end of the station. About 6.28 p.m. on the evening of the 3rd inst., up trains on each of these lines were, almost simultaneously, approaching Gunnersbury, and the signalman in the East cabin had lowered the necessary signals for the main line train to run through. When the main line signals are "off," the loop line is trapped at the east end of the platform to prevent anything from coming off the loop and so fouling the main line ; and, of course, the interlocking of the levers in the cabin makes it impossible for signals to be lowered at the same time for both lines.

Baker appears to have brought his train into the loop platform line at a moderate speed, which he estimates at four to five miles an hour, and the station-master, who watched the train running in, says he did not entertain the least doubt but that it could, and would, be pulled up at the proper place. When the train got near to the siding points, which are a few yards in advance of the signals, the driver states that he noticed they were closed against the main line and that he then at once applied his brakes ; he did not, however, succeed in preventing his engine from striking the wall of the bridge over the railway, at the end of the siding, with sufficient force to buffer-lock two of the passenger vehicles. I find it somewhat difficult to reconcile his statement with his estimate of the speed of the train, for although the siding is short there is a length of over 40 yards between the siding points and the wall in question, and if he applied the brakes (steam having been shut off some distance back) as soon as he says he did, he ought to have been able to pull up in that distance. Driver Baker bears, I understand, a very good character, and he has been a driver for 23 years. His blunder was one of considerable gravity, for not only did he mistake a signal which was quite clear to anyone well acquainted with the signals, but he also ran past the duplicate signals on the platform without noticing them at all ; had he seen the latter he must have discovered his error at once, the main line (duplicate) signals being some yards away from the loop signals. I ascertained from him that he had not been through the station for some months past, and under those circumstances it was clearly his duty to look out for the signals with even greater care than usual.

As explained above, two signals for the main line, and one signal for the loop line, are carried on a high bracket post at the outer end of the island platform, the second loop signal being on a separate post but also between the two lines. There is great difference of opinion among railway men as to the advisability, or otherwise, of concentrating signals in this way, as opposed to the principle of separating them and placing the signals of each line on the proper side of, and alongside, the line to which they refer, and which there was no difficulty in doing in this case. Personally, I adhere to the view I have expressed in previous reports, that the latter is the proper course to adopt whenever possible, and that it is the one which is the least likely to lead to a mistake such as that under consideration, although I readily admit that no arrangement can be devised which will entirely eliminate mistakes due to carelessness or forgetfulness on the part of a driver. The plan adopted at Gunnersbury is that which commends itself to the London and South-Western Railway authorities, and not only driver Baker, but others also whom I questioned on the subject, appeared to be perfectly satisfied with the signalling of the place. No one could recollect any previous instance of the signals being read wrongly by a driver. Whenever the high post is renewed, as I believe it soon will be, it would tend to uniformity if the fourth signal were placed on the new post ; and the two signals of each line should, as far as possible, be bracketed out *over* the lines to which they respectively refer, with as wide an interval between the two groups as can be given.

I have, &c.,
G. W. ADDISON,
*Lieut.-Col. R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

Printed copies of the above Report were sent to the Company on the 23rd September.

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## LONDON, BRIGHTON AND SOUTH COAST RAILWAY.

Board of Trade (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.,
28th August, 1897.

SIR,

I HAVE the honour to report for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 11th inst., the result of my enquiry into the circumstances attending a collision, which took place on the 7th inst., at New Cross station, on the London, Brighton and South Coast Railway.

In this case the 3.29 p.m. London, Brighton and South Coast passenger train from Shoreditch to New Cross, consisting of tank engine and six close-coupled vehicles, when approaching New Cross station on the down East London line, over-ran the down home signal, worked from New Cross yard (or B) cabin, and came into collision at 3.48 p.m. with the engine of a train of empty carriages, which was coming out from the down sidings to cross to the up main line.

The whole of the passenger train kept the rails, but the engine and tender of the empty train were thrown off.

Both engines and two vehicles were damaged. (For particulars see Appendix.)

Thirteen passengers have complained of slight injuries, and the driver of the empty train and the guard of the passenger train were also injured.

## *Description.*

At New Cross station there are five passenger lines, running north and south, two island platforms, and an up platform on the west side.

The East London line is double, but becomes a single line in the station, and trains arrive and depart from the east side of the east island platform. Outside this line are down sidings, and from these sidings there is a through road leading across the East London line, the down local line, the down main line, the up main line and the up local line, in the order named, to the sidings on the up side of the line, with slips leading on to the up and down main and local lines.

The points and signals at the north end of the station are worked from the yard cabin, which contains 89 working levers, and the next block signal cabin on the East London line is East London down junction cabin, which contains 15 working levers.

The only signals to which reference need be made are the New Cross yard down home signal for the East London line, and the distant signal for the same line.

The former is on a high post on the proper side of the line, 115 yards from the cabin, and it is also the down advance signal for the East London down junction cabin, and is slotted from A cabin at the south end of the station, as well as from B cabin.

The latter signal is a lower arm on the East London down junction down home signal, and it is 355 yards outside the yard cabin down home signal.

Both these are good signals, and can be seen a long way off.

The East London line is on a curve, and rises from the junction cabin on a gradient of 1 in 120, to a point a little inside the yard home signal, and is then straight and level into the station.

The point of collision was at the crossing of the East London line and the through road, and the following distances from this point northwards should be noted :—

| | |
|---|---|
| To New Cross yard cabin ... ... ... ... | 37 yards. |
| ,, Down home signal ... ... ... ... | 152 ,, |
| ,, East London down junction cabin ... ... | 360 ,, |
| ,, ,, ,, ,, ,, down home signal... | 507 ,, |

Block working is in force, but trains are allowed to run up from East London down junction when the line is clear to the home signal, although a train may be crossing by the through road.

## *Evidence.*

*John Boizing* states :—I have been 20 years in the service, and a signalman for 19 years, and eight years at New Cross. On the 7th inst. I came on duty at 2 p.m. for eight hours, in New Cross yard cabin (B). We work absolute block in all directions, and in addition to the ordinary interlocking, Sykes' electrical system is in operation. My down home signal from the East London line is No. 81, and the down distant is No. 91. No. 81 is the down starting signal at East London down junction, and it is slotted by me, and also by the South cabin (A) ; and besides that it is controlled by Sykes' apparatus. No. 81 is, among others, interlocked with No. 48, the through crossing points on the down siding. All this locking was in correct order on the 7th inst., and has not been altered since. At 3.44 p.m. the 3.29 London, Brighton and South Coast train from Shoreditch was rung in from East London down junction. I acknowledged the signal, and plunged, which released the block instrument at East London down junction (this was done by my assistant). I gave the train on to the South cabin in the usual way, and received "line clear." At 3.46 the empties from No. 2 siding had to be crossed to the up main line. I kept my signals for the East London line at danger, and trusted to the train stopping at the home signal, as it very often has to. I could see it approaching. I made the crossing for the empty train and took off the disc signals. The passenger train over-ran the home signal, and the two engines came into collision on the crossing. The engine of the passenger train had passed my cabin, and was, I should say, running at 10 miles an hour. I cannot speak as to the state of the brakes, or say whether or not the steam was shut off. I saw the driver—he was sitting down on the foot-plate with his back in the direction in which he was running. I didn't notice what the fireman was doing. My assistant and I both tried to attract the driver's attention—we couldn't get his attention. My assistant held out a red flag and shouted, and I also shouted. The driver had then passed the signal. We thought he would have stopped at the signal until just as he was passing it. The engine of the empties had then started to come out. It was a fine clear afternoon ; the home signal was showing a proper danger signal. Neither engine whistled. It is often necessary to use the through crossing when trains are running up. There is a great deal of work to be done there.

*William Hills* states: I have been nearly nine years in the service and nearly six years a signalman. On the 7th inst. I came on duty at 5.45 a.m. till 2 p.m., in East London down junction cabin, which is closed at night. The 3.29 p.m. Shoreditch to New Cross train, passed my cabin at 3.46 p.m. I had a clear road for it, and I pulled off my home and advance signal for it. The advance signal arm remained at danger, as the slot from the yard cabin was not taken off. I noticed nothing unusual with the train as it passed. I saw the driver on the foot-plate; he was sitting down. This is not unusual. I saw my advance signal arm standing at danger.

*Robert Howell* states: I have been nearly 41 years in the service, and a driver for 31 years. On the 7th inst. I came on duty at 8.15 a.m. at New Cross. First I was doing shunting duty, and then I was working the East London service. My booked time to leave duty is 8.2 p.m. I have several intervals of rest, but none very long. My engine is a small six-wheels-coupled tank engine, fitted with a Westinghouse brake. I took the 2.51 p.m. train from Peckham Rye to Shoreditch, due to arrive at about 3.11. I had to take the same train to New Cross, after getting round. Coming back I was running bunker in front. There were six close-coupled vehicles in the train, and the Westinghouse brake was working throughout. I was at Shoreditch, shunting and standing until 3.29 p.m. I remained on the engine all the time. I stopped at all stations, six in number, between Shoreditch and New Cross, and the brake acted properly at all these stops. The last stop was at Deptford Road. The next signals were the Canal junction signals—these were all clear. The next were the East London down junction signals. The distant signal worked from this cabin was at danger. The home signal was off, but the distant from the yard box was at danger. The advance signal at East London down junction, which is also the home signal for the yard box, was at danger. It is a good signal and can be seen a long way. I passed the junction cabin at a speed of about 10 miles an hour, with steam on. I shut off steam just after passing the cabin. I came forward at a good speed, as if I had to run into the station. I passed the signal at danger by an oversight, and then seeing the empties coming out to cross in front of me I flew to the Westinghouse brake, as also did my fireman, and applied it, but too late to prevent the collision. I was running with a brake pressure power of about 65 lbs., and the brake acted properly. I didn't apply the brake until after I had passed the signal, but before I reached the yard signal cabin. I think my speed at the time of the collision was about 10 or 12 miles an hour. I believe the other engine was still moving forward. The right side of my engine, as we were running, struck the right side of the other engine. My engine and all the train kept the rails. Neither I nor my fireman was hurt. I was standing up on my engine. I was reaching across to attend to the feed as I was approaching the signal, and that is how I made the mistake. I was not sitting down at all. There was nothing the matter with my health, and I was not at all the worse of liquor. I had not been away from the engine to get any drink. I had no drink with me on the engine. I am perfectly well acquainted with the signals at New Cross. Trains are very often pulled up at the home signal, when running into New Cross.

*Charles Maslin* states: I have been in the service for about ten years, and passed for a fireman about four years ago. I am still rated as a cleaner, but have worked as a fireman all this summer. I never worked with driver Howell until the 7th inst., on which day I came on duty at 8.15 a.m. to work till 9.30 p.m. or 10 p.m. It is only recently that we have worked that time. There are no long intervals of rest during the day. The first duty is shunting at New Cross, and the first train is the 11.30 a.m. Peckham Rye to Shoreditch. The last duty would be to bring the up boat train from East Croydon at 6.42, due in London at 7.3. The train is very often late in. After arriving in London we have to bring an empty train down to New Cross—due at 8.3—but we are often late. This is the duty for one day, the next day would be a short one. I worked with Howell all through the day on the 7th. We brought the 3.29 p.m. train from Shoreditch to New Cross. There were six on, and the Westinghouse brake was working throughout. I am well acquainted with the signals between Shoreditch and New Cross. Our last stop was at Deptford Road. The signals were off for us at Deptford Road junction and Canal junction. I think that the distant signal from East London down junction was on, but the home signal was off, and we came past the cabin at a speed of about 20 miles an hour, I think. The home signal for the yard box was at danger. I did not see it myself until the engine was about a dozen yards from it. I had seen it at danger before, as we were approaching the East London junction cabin, but afterwards I was attending to my feeds. My driver was sitting on the edge of the box, with his back to the signal. I shouted to him to stop. He didn't seem to take much notice, so I myself shut off steam, and put the hand-brake on, and then the Westinghouse brake. We had our steam on up the incline from the East London junction. We were not running very fast when the collision took place. I expect if I had put the Westinghouse on first we would have stopped. I couldn't do so, as my mate was in the way. He tried to work it after I had done so. He seemed to be all right, but he seemed to be half dozing off, and stupid. I didn't see him take any drink throughout the day. He hadn't been away from the engine except for about eight minutes at Peckham Rye, when the engine was in the siding. I was not injured. The engine didn't leave the rails.

*Dean Osborne* states: I have been over eight-and-a-half years in the service, and a guard since January 1st 1897. On the 7th inst. I came on duty at 8.15 a.m. to work till 11.15 p.m. In regular course I would have come on at 1.24 p.m., but on that day I came on at 8.15 a.m. to relieve another man who was on excursion duty. I was working between Peckham Rye and Shoreditch, and Shoreditch and New Cross, throughout the day, without any long intervals. I was guard of the 3.29 p.m. train from Shoreditch to New Cross, which was made up as follows:—Tank engine, third-class brake carriage, one third-class, one first-class, one second-class, one third-class, and a third-class brake in which I was riding. It was fitted throughout with the Westinghouse brake, in good order. I left Deptford Road at 3.42, one minute late. The signals were clear at Canal junction. I did not notice East London down junction down distant signal, but the home was off, and we passed the cabin at a smart speed. I did not notice the position of the Yard distant signal. After passing the cabin, and when round the corner, I saw the Yard cabin stop signal at danger. I looked out of the off side to see if we were being flagged in from the signal cabin. I saw no flag from the signal cabin. I had passed the signal then. I knew we had no business there, so I went to the Westinghouse brake and applied it. It was not applied before I applied it. The gauge showed a pressure of 80 lbs. The brake was hardly on a second before the collision took place. I would have applied the brake sooner, but I thought we were running up smart, and that the driver would do so.

*Eli Mockett* states: I have been about 38 years in the service, and about 28 years a driver. On the the 7th inst. I came on duty at 7.20 a.m. at Brighton to work till 6.50. I had to run light to Worthing, take the 9.30 a.m. to London (due at 11.10), and to work empties to New Cross, and up to London to take the 5 p.m. down train to Brighton. I was at New Cross in the afternoon, and had a train of empties to take to London. We should have started at 3.10 p.m., but were late, and the disc was not lowered for me to come out of No. 2 siding to cross to the up main line until 3.46. I was running tender first. I started, and, when nearly on the East London line, I saw the signalman waving a red flag from the Yard signal cabin. My mate called my attention to it first. We were running very slowly. My mate called out "By George! there is a train coming right into us." I then saw this train quite close. I gave steam to my engine, thinking I might get the engine just clear, but the right sides of the engines came into collision. I was running at about four miles an hour. The other engine was running fast; I think steam was shut off just before the collision. I cannot speak as to the brake. I was knocked down and injured. I have been off duty for a week. My mate jumped off and was not hurt. My engine and tender left the rails. Both engines were damaged. I asked driver Howell, about a quarter of an hour afterwards, if he was hurt. He said no, he was not hurt, but was "hurt in the heart." He was still on the engine. He seemed dazed and confused.

*Alfred William Long Parkhouse* states: I am assistant locomotive district superintendent, stationed at New Cross. I was called to the scene of the collision at New Cross on the 7th inst., and was there within ten minutes. After looking round and seeing what had to be done, I saw driver Howell, and asked how the collision came about. He could not give any explanation He was sitting down on the left-hand side of his engine. He seemed to be in a very stupid condition. He might have been only stupefied, but he seemed to me to be drunk, and did not seem to realise what had happened.

## *Conclusion.*

The circumstances under which this collision occurred are of a somewhat unusual character, for, although cases of drivers over-running signals are not very uncommon, it is very seldom that, as in this case, a perfectly clear and distinct danger signal is passed in broad daylight, without driver or guard paying any attention to it.

The down distant and home signals, worked from New Cross yard cabin, were both at danger when the 3.29 p.m. train from Shoreditch was approaching, on the East London line, and the driver states that he saw them both in that position.

In spite of this it appears, by the evidence, that he was sitting down with his back towards the home signal as he was approaching it, and that he took no steps whatever to stop his train, although his fireman called his attention to the signal at danger when close to it. Even then the train might have been stopped in time, if the proper steps had been taken promptly, as the signal is 150 yards from the point of collision, and the speed of the train was not very high; but the driver, who was clearly not in a fit state to be in charge of an engine, did nothing, and the fireman, after shutting off steam, lost valuable time by first applying the hand brake, instead of at once applying the Westinghouse brake.

The fireman had seen the home signal at danger when a considerable distance away from it, but he says that, after passing the East London down junction cabin, he was attending to the feed, instead of looking out for the signals, as he should have done, and, consequently, he did not see the signal again until he was close to it, when he warned his driver.

There is some excuse, however, for him, for he was a very young fireman, and was in the trying position of being with a driver unfit for work, and having everything in connection with the engine thrown upon his shoulders.

The guard of the train, who had it in his power to apply the Westinghouse brake, states that he saw the East London down junction down home signal off, and the yard home signal at danger, that, as they passed the latter signal at danger, he looked out to see if they were being flagged past it, and that then, and not till then, he applied the Westinghouse brake, before anyone else had done so, according to him.

By his own showing he was in fault, for it was his plain duty to do all in his power to pull up the train, as soon as it became apparent to him that it was going to over-run the signal, which should have been some little distance before they reached it, whereas he does not claim to have applied the brake until just before the collision occurred.

If he saw, as he says he did, the East London down junction down home signal off, he ought at the same time to have seen the yard distant signal, a lower arm on the same post, at danger, and to have kept a sharp look-out for the home signal.

It will be noticed that he states that no flag signal was being shown from the signal cabin when he looked to see if the train was being flagged past the signal, whereas it is clear, from the evidence of the signalman and the driver of the empty train, that at that very time a red flag was being waved towards this train, and it is my belief, and that of the Officers of the Company, that this guard was not keeping any look-out whatever, and must be held, to some extent, responsible for the mishap.

At the time, the driver, fireman and guard had been on duty for 7½ hours.

Although the collision was due principally to the misconduct and carelessness of the driver, it would not have occurred if the empty train had not been allowed to come out of the siding as the passenger train was running up to the home signal, which, it appears, was not contrary to the rules of the Company.

At stations, such as New Cross, where there is a great deal of shunting, and a great deal of work to be got through, it is no doubt difficult to carry out block working as strictly as at less busy places, and at many stations it has to be suspended altogether, but drivers should be ordered invariably to approach such stations cautiously.

It would, however, conduce to safety at New Cross if the signalmen in the yard cabin were instructed not to allow a train to come out of the siding on to the through-road when a train is approaching from East London junction, until such train has come to a stand at the home signal, and I would recommend the Company to draw up regulations to that effect.

I have &c.,
F. A. MARINDIN,
*Major, R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

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## APPENDIX.

### DAMAGES TO ROLLING STOCK.

Engine, No. 199.—Trailing buffer-plate, driving-splasher, leading-splasher, and side wing of cab bent, also angle-iron; angle-iron of foot-plate broken, also left-hand side of foot-plating broken, about 5 feet.

Tender of engine, No. 199.—Left-hand side trailing buffer-plate, foot-plate, and leading buffer-plate bent, foot-plate angle-iron broken; new foot-steps are required.

Engine, No. 59.—New bunker-back and side of cab, new side-sheet to side-tank, new buffer-plate and buffers, trailing-end, and new foot-steps required; also, new foot-plating, inside of cab, and new foot-plating required; side of engine and angle-iron broken, requires new end welding on.

3rd class brake, No. 981.—Step-board and two buffer castings broken.

Brake van, No. 133.—Step-board, head-stock, and two end-boards broken.

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Printed copies of the above Report were sent to the Company on the 10th September.

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## LONDON, BRIGHTON, AND SOUTH COAST RAILWAY.

Board of Trade, Railway Department,
8, Richmond Terrace, Whitehall, London, S.W.,
October 31st, 1897.

SIR,

I HAVE the honour to report for the information of the Board of Trade, in compliance with the Order of the 1st September, the result of my enquiry into the accident that occurred on the same date, between Heathfield and Mayfield stations, on the Eastbourne—Tunbridge Wells line of the London, Brighton, and South Coast Railway.

In this case, the 8.18 a.m. passenger train from Eastbourne ran off the line at a point about 2½ miles north of Heathfield station. The engine and leading carriage were overturned on their right sides, just clear of the rails and overhanging the eastern edge of the high embankment on which the line is here carried; the under-frame of the second carriage was on its left side across the top of the embankment, with the body of the carriage upon the slope, and near the bottom, of the embankment on the west side of the line; the third and fourth carriages, the former on its right and the latter on its left side, were at the bottom of the embankment, parallel to the line, and more or less on the top of one another; the remaining two carriages were on their left sides, partly on the slope but also nearly at the foot of the embankment. The train was separated between the second and third carriages, the coupling being broken, and the body of the former carriage had evidently rolled down the embankment, turning completely over at least once. The engine stopped in about 100 yards from the first mark of a wheel being off the rails.

Thirty passengers have complained of injury, but, so far as I am aware, only in a few cases were the injuries of a severe nature. The driver was fatally injured and died a few minutes after the accident. The fireman was badly hurt, and the guard was cut and bruised on the head and body.

Details of the damage to the rolling stock are given in an appendix.

The permanent way was completely destroyed, the sleepers being splintered and the rails torn up, for a distance of about 80 yards, and it was disturbed and damaged for a further length of about 20 yards.

## *Description.*

The line from Eastbourne to Tunbridge Wells, running approximately from south to north, is single from Polegate to Eridge, a distance of about 20½ miles out of a total length of 29¾ miles. The portion between Hailsham, 3 miles north of Polegate, and Eridge, was opened in 1880, the permanent way consisting of:—78 lbs. steel rails, in 21-feet lengths, carried in cast-iron chairs, weighing 33 lbs. each, fastened to 9-feet by 10-inch by 5-inch sleepers by three hollow trenails and spikes; there were eight sleepers to each rail length, laid 2 feet 2 inches apart at the rail joints. The rails were fished at the joints with fish-plates weighing 23 lbs. per pair. The bottom ballast is stated to have consisted of chalk, and the top ballast of shingle.

From Polegate to Horeham Road, 8¼ miles, the line presents no special features which need be referred to, but from the latter place to Eridge, 12¼ miles, there are numerous short, reverse, curves, and steep gradients alternately rising and falling. The following table shows the curves and gradients between Heathfield and Mayfield, 3¾ miles, commencing from the south end of the former station, as given in the returns furnished to the Board of Trade prior to the line being opened:—

| Gradients. | | Curves. | | |
|---|---|---|---|---|
| Length in Yards. | Inclination. | Length in Yards. | Radius in Chains. | Side to which it bends. |
| 726 | 1 in 304 rising. | 1372 | 30 | right. |
| 3564 | 1 in 50 falling. | 94 | straight. | |
| 110 | horizontal. | 490 | 24 | left. |
| 2178 | 1 in 50 rising. | 462 | straight. | |
| Through Mayfield station. | horizontal. | 321 | 30 | left. |
| | | 24 | straight. | |
| | | 262 | 24 | right. |
| | | 583 | straight. | |
| | | 407 | 24 | left. |
| | | 101 | straight. | |
| | | 468 | 24 | right. |
| | | 167 | straight. | |
| | | 470 | 24 | left. |
| | | 92 | straight. | |
| | | 429 | 36 | right. |
| | | 62 | straight. | |
| | | 286 | 60 | left. |
| | | 352 | straight. | |
| | | Through Mayfield station. | 20 | right. |

The accident occurred at a place known to the railway men as Tooth's Bank, where the line is carried on an embankment, at the foot of the falling and rising gradients of 1 in 50, and where the line is on a curve to the right of 24 chains radius.

The engine of the train, No. 297, is a six-wheeled side tank engine, with four coupled wheels, 5 feet 6 inches in diameter, and trailing wheels, 4 feet 6 inches in diameter. The centre of the boiler is 6 feet 11 inches above rail level. The total wheel base is

15 feet, and the total length over the buffers is 31 feet 7½ inches. The total weight, in working order, is stated to be 38 tons 10 cwt., distributed as follows:—

| | Tons. | Cwt. |
|---|---|---|
| Weight on the leading wheels ... ... ... | 13 | 10 |
| „ „ driving „ ... ... ... | 13 | 10 |
| „ „ trailing „ ... ... ... | 11 | 10 |

It is stated that the engine was thoroughly repaired about 12 months ago. The engine was running chimney in front.

The following table gives particulars of the carriages composing the train:—

| Description of Vehicles in their order from the front. | No. of wheels. | Weights. | | When last in Shops. |
|---|---|---|---|---|
| | | Tons. | Cwt. | |
| 3rd class, No. 482 ... ... ... | 6 | 12 | 1 | Finished in June 1896. |
| 1st and 2nd class composite, No. 88 ... | 4 | 7 | 16 | December 1896. |
| 3rd class brake, No. 622 ... ... | 4 | 7 | 17 | March 1897. |
| Van, No. 217 ... ... ... ... | 4 | 7 | 16 | June 1896. |
| 1st, 2nd, and 3rd class composite, No. 277 | 6 | 12 | 5 | July 1897. |
| 3rd class brake, No. 428 ... ... | 6 | 11 | 17 | September 1896. |

In the Appendix to the Working Time Table it is laid down that, owing to the gradients of the Tunbridge Wells and Eastbourne line "for a passenger train from 10 to 12 "vehicles, including brakes, will be an ordinary load, and 15 vehicles, including brakes, "the maximum load, according to the class of engine, state of weather, etc.; one bogie "carriage to count as two ordinary carriages."

The whole of the engine wheels were braked, and in the remainder of the train about four-fifths of the total weight would be on braked wheels.

So far as can be ascertained the engine and carriages were in thoroughly good order previous to the accident.

## *Evidence.*

*James Hysom* states: I have been 21 years in the Company's service, 18 years a guard. On September 1st, I came on duty at 7.25 a.m. to work until about 8 p.m. At the former time I went as a passenger from Brighton to Polegate, and at the latter place I took charge of the 8.18 train from Eastbourne to Tunbridge Wells. The train was made up as follows: Engine, third-class, composite, third-class brake, luggage van, composite, and third-class brake carriages—of these the first, fifth and sixth were six-wheeled and the other three four-wheeled coaches. I rode in the rear vehicle. We left Polegate at 8.28, right time; arrived Hailsham 8.36, left at 8.40; arrived Hellingly 8.44, left at 8.45; arrived at Horeham Road at 8.52, left at 8.54; arrived at Heathfield 9.1, left at 9.3. Between Polegate and Heathfield the speed would be about the same as usual, and I noticed no oscillation or jumping of the van. My duties generally take me on the main line, between Brighton and London; I have very rarely been on the Polegate—Tunbridge Wells line, but I was through it on the day previous to the accident—once in each direction. I did not then notice anything whatever wrong, or unusual, in the running of the train. After leaving Heathfield, on the 1st, everything went well until the accident occurred. I think I was kneeling on the slat in the projection of the van, looking out ahead on the left-side, when I felt the van drop down off the metals, without any previous warning, and I found myself at the bottom of the bank almost at once. The van was then lying on its left-side, with three vehicles in front attached and also at the bottom of the bank. I was able to get out without assistance, but I had to break the van to get out; I was badly cut above the right eye and bruised in various parts of the body. I have not been able to resume duty yet. At no place, either on the 1st September or on the previous day, did any passenger complain to me of fast running, or of any discomfort being experienced. Whether the driver ran down the incline from Heathfield towards Mayfield with steam on, or not, I cannot say—nor had I noticed on the previous day. The brakes seemed to go on at the same time as the van left the road. The train was made up in exactly the same order on August 31st and on September 1st, and the only changes in the vehicles on the two days was in the substitution of van No. 242 on the 31st for No. 217 on the 1st. The two last vehicles of the train are always detached at Groombridge, to go through to London.

*Edwin Head* states: I have been 38 years in the Company's service, and for 17 years station-master at Heathfield. Although I have at times heard complaints, from residents, of the steep gradients and sharp curves of the line no definite complaint has ever been made, and no remarks have been made by passengers passing through the station. I have not travelled over the road between Heathfield and Mayfield for some years past. I went to the scene of the accident immediately after it occurred, but I am unable to offer any explanation of the probable cause of the accident. I have walked the line from Heathfield to Mayfield, but it was usually between trains, and I have not seen them running over the spot where the accident happened.

*Albert Guy* states: I have been in the Company's service 16 years, and am now signal lineman at Polegate—my district being from Eastbourne to Eridge, and St. Leonards to Berwick (between Polegate and Lewes). As a rule I should be on some part of the road between Polegate and Eridge every day, either going or returning by train and sometimes in the train both ways. I ride in a third-class passenger carriage. The road in question is certainly rougher to travel over than the main line is, and passengers in the carriage with me have sometimes commented on it. It has practically always been between Heathfield and Mayfield, near the place where the accident happened, that the roughness has been remarked. The remarks were made with reference to the carriages swaying from side to side going round the curve, and nearly always when running from Heathfield to Mayfield. The traffic over the line is worked by four or five drivers, and the speed between the points named above varies, but it is usual to run fast down the bank, and I should estimate the speed at from 35 to 40 miles an hour. On the 1st September, I joined the 8.18 train *ex* Eastbourne at Hailsham, and prior to the accident I did not notice anything unusual in the running of the train; the carriage I was riding in (next to the engine) swayed a little coming down the bank, but not more than usual. There were two other passengers in the compartment with me (both servants of the Company), and they made no remark about the speed or running of the train on the falling gradient. I had noticed nothing at all until my carriage left the road, when it seemed to drop down on to the ballast—it did not seem to jump at all. I said, "We are off the road." I stood upon the seat and got hold of the hat rail, and then the carriage turned over on its right side; the carriage was hanging over the edge of the bank, and I lowered the window (the glass not being broken) and crept out on to the bank, the other two men following me. None of us were hurt.

*Evan Cameron* states: I have been over 27 years in the Company's service, and I am now Assistant Carriage Superintendent. I examined the passenger vehicles of the 8.18 train *ex* Eastbourne about 4 p.m. on the day of the accident. I found the whole of the wheels true to gauge, and there were no worn tyres; there was not a broken spring in the train. As regards the carriages, No. 482, third, was only finished in June, 1896; No. 277, composite, was built in June, 1894; No. 428, third brake, was built in December, 1895. The whole, including the new vehicles, have been in the shops within the last 12 months. I saw nothing whatever in their condition to account for the accident. The train was divided between the second and third carriages, the brake connections of the last four were intact and the frames of the six were practically uninjured; the body of the second carriage became separated from its under-frame, and went down the bank, the under-frame remaining on the top of the bank, across the line.

*John Woodhead* states: I have been nearly 39 years in the Company's service, and 12 years Outdoor Locomotive Superintendent. I arrived on the scene of the accident between 3 and 4 o'clock in the afternoon. I saw the wheels of the engine tried with the gauge, and they were all correct; the tyres were in thoroughly good condition. The engine had been thoroughly repaired about 12 months ago. It is a six-wheeled side-tank engine, with four coupled wheels in front, and the engine was running chimney first. This pattern is used for local passenger traffic over all sections of the London, Brighton, and South Coast Railway, and also for main line stopping trains. The total wheel base of the engine is 15 feet; the weight on the leading and driving wheels 13 tons 10 cwt. in each case, and on the trailing wheels 11 tons 10 cwt., in working order. These engines take 10 to 12 vehicles regularly over our system, where the gradients and curves are somewhat similar to those of the Eastbourne—Tunbridge Wells line (although, perhaps, rather less severe) in all kinds of weather. Engines of this class have been in use over 20 years on the line. On the day of the accident the engine was driven by driver McKinley, who had had the engine from July 2nd previously, and had worked over the same road regularly for the last nine years. As fireman, he had been over it from the date of its opening, 17 years ago. He was a very good, steady man, and he had as clean a sheet as probably any driver of his length of service. He would be over the road on August 28th, and once or twice every week previously.

*William Smith* states: I have been 39 years in the Company's service, and I have been a Chief Inspector of permanent way for the last six years. The section of line between Heathfield and Eridge was opened on September 1st, 1880, and for a year subsequently the maintenance was in the hands of the contractor who had built the line, and at the latter date I was assisting the Permanent Way Superintendent. From that time until July of the present year I have probably been through the line once a month, or thereabouts. The line has not been "renewed" during that time, but repairs have been carried out whenever my Sub-Inspectors thought it necessary. My duties now extend over the whole of the northern division of the railway. I think that, in repairs, most of the original sleepers have been taken out, but the rails and chairs in use are the same as when the line was opened, and they are now in fair condition. The rails are 78 lbs. double-headed steel rails, in 21-feet lengths, with eight sleepers (of the ordinary dimensions) to each rail length; 33 lbs. chairs (original weight) fixed with three trenails and spikes. I am not aware that the permanent way of the line has been specially troublesome to maintain, but there have been slips both of the cuttings and embankments — nothing of importance, however, as regards the cuttings. There was a slip on the same bank where this accident happened, but nearer to Mayfield, last winter; I saw the work of making it good while in progress. The bank has a good deal of chalk in it, and much rocky material has been brought down from Mayfield and put into the bank from time to time. I have issued instructions to the inspector and ganger to pay special attention to the permanent way at the bottom of the incline. I have generally tried the gauge when going through the line; I tried it last on May 8th, it was then correct, and the road was in first-rate order. I have often seen trains running over the road, but I have never seen the road injured at all by fast running. The trains come down the bank from Heathfield pretty fast, and I am sure I have ridden down it myself at a speed of 40 miles an hour. I have officially drawn the attention of my superior officers to the fact that trains were running between Heathfield and Mayfield at too high a rate of speed. I have drawn attention to similar fast running down other banks in my district, but, perhaps, not so often as in the Heathfield—Mayfield case.

*William Burt* states : I have been 38 years in the Company's service, and I have been Chief Inspector of permanent way, southern district, six years. On July 1st of the present year the line from Heathfield to Eridge was added to my district. I walked over the whole of that length about the end of July, when I found nothing to complain of. I did not then try the gauge anywhere near the scene of the recent accident. I tried the gauge a few hours after the accident, on both sides of the break, and it was then just right—the super-elevation of the outer rail varied from ½-inch to 2½ inches. For about 20 yards the sleepers were cut through the middle, and in many places the bolts were torn right through the ends of the sleepers. I found no rotten sleepers. There was one rail broken in two pieces, both of which I saw on the bank on the west side of the railway ; one piece lay about half-way down the bank, and the other nearly at the bottom—both about opposite to the third carriage. From the gradient board, about 100 feet on the north side of the occupation crossing, for about 800 feet along the road towards Mayfield, *i.e.* over all the ground where the run-off occurred, borings have been sunk, at 50-feet intervals, to ascertain the depth of ballast, etc. under the sleepers—the original, or formation, level was found in each case. The "ballast" shown in the second column above would be gravel and beach ballast. My attention has not been drawn to any excessively fast running at this spot. On the 26th August I rode over the road in the brake next to the engine, to look at the road, as I often do, to see how the engine travelled over it. I was going from Mayfield to Heathfield—the running was very steady.

| Boring. | Depth of ballast. | | | | Remarks. |
|---|---|---|---|---|---|
| | Ashes. | Ballast. | Ashes. | Chalk. | |
| No. 1 | 3 inches. | 6 inches. | 2 ft. 0 ins. | Nil. | The old beach ballast below. |
| " 2 | Nil. | 6 " | 1 " 4 " | " | |
| " 4 | " | 3 " | 1 " 0 " | 2 ft. | |
| " 6 | " | 3 " | 0 " 9 " | 3 ins. | |
| " 8 | " | 12 " | Nil. | Nil. | |
| " 10 | 2 ft. 6ins. | Nil. | " | 6 ins. | |

*James West* states : I have been 29 years in the Company's service, and a ganger 17 years. My length extends for 2½ miles, about, from Mayfield towards Heathfield, and I have had charge of it ever since the line was opened. I do not think any of the original sleepers are still in the length. In the spring I put in about 20 new sleepers on Clayton's, or Tooth's, bank, and, as a rule, the old spikes would be used again. I have had no particular trouble with the fastenings, and the gauge has kept right; twice lately we have had to pull the road back into place a little near the road crossing, but nothing particular. About a fortnight ago I picked up a little bit of slack in the road. I have not had my level down there for some time, and I do not know whether the cant of the outer rail is correct. I try to keep it to 2½ inches. We have brought stuff down to put outside the sleepers, to prevent the road from being pushed out on the curve. I have had more trouble round the bottom than on any other curve. There had been some heavy rain previous to the accident. I was over the road twice on the morning of the accident, first at about 6.30 and again about 7.30, and I always take particular notice of everything at the bottom of the hill. I saw nothing there requiring attention. In wet weather we have had to pack up the sleepers, more or less, several times a week. I think the bank is very soft. We have used ashes as ballast to a considerable extent, so as not to place more weight than necessary on the top of the bank. I have sometimes spoken to drivers about running too fast, but I have not found it necessary to make any report, and I do not think they have run so fast lately as they did at one time.

*Frederick Brabery* states : I have been 22 years in the Company's service, and for 11 months past a Permanent Way Inspector. My district includes the line from Heathfield to Tunbridge Wells. I was last over the road where the accident happened on August 16th, when I walked through from Mayfield to Heathfield; I looked carefully at everything, but I noticed nothing whatever out of order. I go over it about once a fortnight, or once in three weeks. In wet weather the bank will give us a little trouble, but not much more than other banks. I had stuff brought to the spot after the slip which occurred, higher up, about January last, and it was placed on the outside of the curve against the sleepers, to prevent them from moving as far as possible—probably about 60 yards in length would be dealt with. It was raining hard all the early morning of the day on which the accident happened. I have noticed trains coming down the hill pretty fast, but I have not reported any special case, although last winter I spoke to one or two drivers about it.

*Stephen Holmwood* states : I have been 26 years in the Company's service, and a platelayer for 17 years. On September 1st, I was sent to the scene of the accident, to assist in repairing the road, and I arrived there about 11 o'clock. Just before dark one of the extra gang (from Groombridge) showed me two pieces of iron, which I produce, and which he said he had picked up during the day, about four yards on the south side of where the first chair was marked, and in the four-foot way. They belong to the brake gear of the engine. Fireman Minns is my nephew. I visited him a few days after the accident, when he asked me if anything had fallen off the engine—and I told him I did not know.

*Henry Weeding* states : I am one of the extra gang, and I was sent to Mayfield to assist in repairing the road after the accident. I showed the pieces of iron to Holmwood on the morning after the accident—not on the same day.

*Lewis Minns* states : I have been nearly 14 years in the Company's service, and a fireman nine years. On the 1st September I came on duty at 7.35 a.m. to work until about 8.45 p.m., and it is generally later than that before we sign off ; we have no time allowed off the engine during the day. My turn of duty takes me over the line between Polegate and Groombridge sometimes once a week, sometimes two or three times a week, and other times not at all. The engine on the train which came to grief, No. 297, is a six-wheeled, side-tank engine (four wheels coupled), the driver's name being James McKenly, and we had been with the engine about six weeks ; prior to that I was on a similar tank engine, and nearly all my experience is limited to that pattern, but occasionally during the summer of last year I was on tender engines. I do not think that on an ordinary good road the tank engines are rougher to ride on than tender engines, but they may twist about a little more at high speed. I have never known my driver to earn any coal premium, except with goods trains, between Eastbourne and London on the main line. Before the accident, the last time I was on the line between Heathfield and Mayfield was on August 27th. The road then seemed to be a bit rough, rougher than usual, but not bad enough to report. I was not aware that we were behind time on leaving Heathfield on the 1st September. We had run from Polegate at about the usual speed, and I had not noticed any roughness of the road. The fastest running would be between Hailsham and Hellingly. After leaving Heathfield and coming out of the tunnel, the regulator was nearly closed, as was the custom with my driver; the regulator was not opened any more before we left the road. The engine would be getting a little steam, but only a little, all the time. About half-way down the incline, the driver applied the Westinghouse brake, to steady the train, as usual—my driver made a practice of doing it—the blocks would be just rubbing against the wheels, and I am of opinion that the speed of the train would be reduced by the action of the brakes. Just after coming out of the cutting, we felt the road very rough, and the driver applied the brake fully; this would be just before we left the road, and I am positive it would be before the run off occurred. The engine was then swaying to and fro, rolling from side to side, not pitching. I should say we ran about the length of the train on the rails after we first felt the roughness of the road. I estimate the speed when the brakes were fully applied at 22 miles an hour. I am sure the speed would then be less than the average speed between Heathfield and Mayfield. The first thing I felt after the roughness was that the trailing wheels dropped down, as it seemed to me, between the rails, and the engine went away to the right; my mate said something, but I could not catch what it was. I do not know at all what happened to him, but the engine turned over on its right side, and I went over with it. My side of the engine was the right-hand side. I got out, unassisted, on the top of the engine, and a gentleman asked me to shut the steam off, and to draw the fire—the wheels were going round slowly at the time. The automatic brake applied to all the wheels. I have been off duty ever since, suffering from internal injuries. My driver had said he did not like going over this road, and the bit at the bottom, between Heathfield and Mayfield, is the worst portion of it. He had never reported it, so far as I can recollect. Platelayer Holmwood came to see me three or four days after the accident, when I asked him whether a portion of a brake-block had been knocked off the engine. I had seen the blocks all right at Horeham Road, and while on the spot after the accident, something missing from one of the blocks had caught my eye. The question had no reference whatever to the cause of the accident. In my opinion the road "gave out" under the engine.

*George Major* states: I have been 25 years in the Company's service, 17 years a driver. My engine, No. 232, is a six-wheeled side-tank engine (four coupled wheels). It is practically identical with No. 297. On the 1st September I left Eastbourne at 7.3 a.m. to run to Tunbridge Wells. I believe we left Heathfield at right time, viz., 7.48. Running between Heathfield and Mayfield I nearly closed my regulator after getting through the tunnel, as usual, and it remained in that position until I got round the bottom of the bank, when I opened it. Directly the engine begins to run a bit my mate puts on his hand brake slightly, and I also use the Westinghouse brake to keep the engine steady. The highest speed running down the bank would be about 25 or 26 miles an hour, and before reaching the spot where the accident occurred the speed would always be less than I have given above. I think we run quite as fast up the hill to Mayfield as we run down the bank from Heathfield. I noticed nothing the matter with the road that morning to take any notice of: it was no rougher than usual. I have sometimes spoken to the platelayers at Mayfield in reference to the condition of the road at Tooth's bank. Sometimes the running there is fairly good, at other times there is a swaying from side to side, as though one rail (I should fancy the left-hand rail) had gone down. I should not say that bit of road was ever in really good running order. I have earned coal premiums with passenger trains between Brighton and Tunbridge Wells, but not on the Eastbourne—Tunbridge Wells line. The roughness of the road which we generally feel begins in the cutting at the occupation crossing, and ends about opposite to Clayton's Farm. I have not complained at all of the road lately.

*William Miller* states: I have been 20 years in the Company's service, and a driver about 11 years. My engine, No. 378, is a bogie tank engine (trailing bogie, driving and leading wheels coupled). The last time I was over the road between Heathfield and Mayfield before the accident was on the 23rd August, running from Eastbourne to Tunbridge Wells with the 7.30 p.m. train. On arriving at Mayfield I reported to Mr. Parker, the station-master, that the left-hand rail at Tooth's Bank was low. I could feel by the engine going round the curve that the bank was not solid, and it seemed to give way. On the return journey Mr. Parker told me he had spoken about it to the platelayers. I had been up and down the road pretty frequently some weeks before then, and the road was worse on that date than it had been previously. When I am running down the hill from Heathfield there would be a little steam on, and I should steady the train with the Westinghouse brake. On the straight bit of road coming down the hill I should let the engine go, and then steady it again on the curve before reaching Tooth's Bank. I come round Tooth's Bank at a speed of about 20 to 25 miles an hour; it is usually a bit rough there.

*Joseph Henry George* states: I have been 18 years in the Company's service, 11 years a driver. My engine, No. 272, is the same type exactly as the engine of the train derailed on September 1st. On that date I left Tunbridge Wells at 7.34 to run to Eastbourne, and we arrived at Mayfield about 8.3, two minutes late. Running between Mayfield and Heathfield I did not find the road any rougher than it generally is after rain, and I did not think it necessary to make any complaint on arriving at the latter station. I have never complained of the road so far as I can recollect. With a load of six carriages I should go up the hill just as fast as I come down the other hill, the train in the latter case being steadied with the brakes. I have not earned any coal premium on that road.

*Charles Langbridge Morgan* states: I am Chief Engineer of the London, Brighton, and South Coast Railway, which position I have held since February 1st, 1896. On the 23rd August I went by train from Eastbourne to Eridge, and then walked along the line, in the reverse direction, from Eridge to Heathfield. I went over the line in order to make myself more fully acquainted with it, but I had been over it previously several times in the train. I only examined the line generally and did not try the gauge, nor check the super-elevation of the outer rail on the curves. When riding over the line that day, and on previous occasions, I noticed that we went at a very good speed over Tooth's bank, and on the falling gradients generally. My attention was not specially drawn to any roughness at Tooth's bank. When walking through the section between Mayfield and Heathfield I found the line in very good condition; the rails were sound, fastenings good, sleepers also good, and the ballast sufficient (although it is not, perhaps, a fully ballasted road) and of good quality. I arrived at the scene of the accident about 9 p.m. the same evening. I examined the sleepers and I was quite satisfied with their condition. The chairs were originally 33 lbs. in weight, and the average of three chairs weighed since the accident was 32½ lbs.; The rails were double-headed, originally 78 lbs. in weight, and the average of three, weighed since the accident, shows a loss of 2·16 lbs., the greatest loss being only 2·72 lbs. The super-elevation given to the outer rail of the curve appears to have been about 2½ inches, but I am inclined to think that this is rather more than necessary at the speed trains should run there. If at any part of the curve the super-elevation was not more than ½ inch or 1 inch that would be too little, and if such was the case before the accident it ought to have been found out and remedied. I think the road is quite safe at a maximum speed of 25 miles an hour.

*Humphrey Beale* states: I am one of the platelaying gang on the length between Mayfield and Heathfield. On August 26th, I think, the station-master at Mayfield told me about 8.20 p.m. that the road was getting a little crooked at the bottom, but I understood it was not necessary to do anything that night. We went there next morning and found one or two rail lengths on the curve, at the bottom of the hill, knocked out a little bit. We pulled the road back and left everything all right.

### *Copy of Report made by Mr. Parker, Station-master, Mayfield, dated September 29th,* 1897.

I have no trace or recollection of any complaint having been made on 23rd August, but on evening of August 26th, on arrival with 7.30 up train he (driver Miller) asked: Shall you see the platelayers to-night? I replied, I can see them—Why? He said there is a rough place down in the bottom again, seems to pitch over more than it should. I said, I will see them at once. Is it all right about you going back? He replied, Oh yes, not so bad as that, but seems knocked out a bit. I replied, All right, I will see them and have it done first thing in morning. Directly the train was gone I sent a porter to find the men, but he had not got away from station before one man named Beale came into the office for his money. I told him what had been said and he replied we have orders to go there first thing in morning. The ganger, J. West, was, I believe, away on leave.

### *Conclusion.*

The evidence in this case discloses no defects whatever in the rolling stock to account for the accident. I had an opportunity of seeing the engine and carriages a few hours only after the accident, before any attempt had been made to move them, and I agree that the cause must be sought for elsewhere. One witness, Stephen Holmwood, speaks of two pieces of iron which were picked up on the Heathfield side of the first mark of any wheel having been off the rails—forming part of the brake gear of the engine—but further investigation has satisfied me that it is quite impossible to say where these pieces of iron were originally found. They were first noticed by another man on the morning after the accident, when the line had been repaired, and they probably were picked up elsewhere and placed where they were afterwards found during the work of repairing the line. Neither I nor the Company's officers had seen anything of them on the previous day, although the particular spot mentioned by Holmwood was carefully gone over by myself and others when measuring the gauge, the super-elevation of the outer rail or the curve, etc.

On the morning of the 1st September, the 8.18 train, with only six vehicles behind the engine, left Eastbourne at the booked time, and in due course it left Polegate, where the single line commences, also at the proper time, viz., 8.28. On arrival at Heathfield, 10¾ miles from Polegate, it was three minutes behind time, which had been lost at stations, and it remained there two minutes, instead of one minute as advertised, so that the train was four minutes late on leaving Heathfield. Up to this time, at any rate, there seems to be no reason to suppose that the speed was unduly high, or that anything had occurred to make it necessary to exercise any special amount of caution in handling the train. About 2½ miles after leaving Heathfield, just as the train arrived at the bottom of the falling gradient of 1 in 50, and at the foot of the equally steep gradient, it was suddenly derailed with the results already described. The guard, as it happens, did not note the time at which derailment occurred, and it is therefore necessary to consider in some detail what the speed probably was immediately before the occurrence.

The distance from Heathfield to Mayfield is 3¾ miles, and the time allowed is nine minutes. Making a moderate allowance for the time lost in starting at the one station and pulling up at the other, the ordinary average running speed would thus be between 28 and 29 miles an hour. As described above, the line between these two places falls sharply at 1 in 50 for a length of over two miles, and then rises at 1 in 50 for nearly 1¼ miles. Several of the drivers who habitually work over the line were examined at my enquiry, and they appear to think that with a light train there is not much difference between the speed on the falling and the rising gradients respectively. It is, however, quite impossible to accept such statements as being correct, although they may be made in good faith for it is difficult enough to estimate speed on level ground, and that difficulty is enormously increased on steep gradients. Since the accident the speed has been taken for me, at the quarter mile posts, of two trains running from Heathfield to Mayfield, without the drivers being aware that this was being done. The result shows that the speed on the falling gradient averaged about 32 miles, and on the rising gradient about 22 miles an hour. What is still more important is that speeds of 35 and 37 miles an hour were measured at certain points, when running down hill, and that the speed was in one case 35 miles, and in the other 25 miles an hour, at a point not more than 200 yards from where the accident happened. Returns which have been got out appear to show that time is not infrequently saved, to the extent of one minute, between Mayfield and Heathfield, which must be mainly, if not entirely, saved when running down hill. I therefore do not consider that those witnesses exaggerate at all who speak of the speed being sometimes as much as 40 miles an hour on parts of the falling gradient.

An examination of the table of curves and gradients given above, will show that the most favourable bit for fast running would naturally be on the straight length of 583 yards, which is referred to in driver Miller's evidence; this is followed by a left-handed curve of 24 chains radius, then by a short length of straight (101 yards) and the reverse, right-handed, curve of 24 chains radius on which the run-off took place. That the speed was generally reduced, to some extent, before taking the second curve, may be accepted as being probable, but to what extent it is impossible to say, and in some cases the reduction may have amounted to very little. In the particular case under consideration, the fireman states that the engine was getting a little steam all the way down the hill, and that the brakes were used to steady the train, as usual, on the curves, etc.; the driver is given a most excellent character, as a reliable and careful driver; and the guard, and a signal-lineman (Albert Guy) who was in the train and is constantly on the line, say they do not think the speed was any faster than usual. The train was, as already stated, four minutes late, and it had an important connection to make at Groombridge, so that it would not be a matter of much surprise if the driver was trying to make up a little time—the same thing having, beyond doubt, been done by himself and others on previous occasions. There is, however, no evidence of anything of the kind, and I am not prepared to say more than that the speed was most probably greater than was desirable under the special circumstances of the line.

Taking the condition of the single line—Polegate to Eridge—as a whole, it may be said to be in very fair order. The rails weighed originally 78 lbs. per yard, and they appear to have lost little of that weight and to be still in serviceable condition; the chairs are somewhat lighter than would be used at the present time with those rails, but I see no reason to think they are unfit to be in the road. At the Coroner's inquest, evidence was given to the effect that one of the broken chairs (after the accident) showed an old fracture, and that the run-off was mainly due to this cause. I think it is scarcely possible such a broken chair could have escaped the notice of the permanent way staff (the ganger had been over the road twice that morning) and one broken chair, if it existed, could hardly be accepted as sufficiently accounting for an accident. The sleepers are generally sound, and where the accident happened many of them have only recently been renewed; the fastenings are, generally, secure. The ballast is also, as a rule, sufficient in quantity and of very fair quality.

Turning now to the section of line between Heathfield and Mayfield, there are, as will be seen from the description given above, many reverse curves, and I found the superelevation of the outer rails of the curves to be very irregular, which should not be the case and which would go far to account for the oscillation complained of when trains run at all fast. Immediately before that part of the embankment (Tooth's bank) on which the accident took place, where the line is on a curve of 24 chains radius, the super-elevation of the left-hand rail dropped from 2½ inches to ½ inch ; at the same spot, the road was found—after the accident—to have been pushed out, towards the outside of the curve, about 1 inch in four rails' length. Whether the line was thus displaced by *previous* running over it the same morning or not it is impossible to say, but the drivers of the two trains immediately preceding the 8.18 train appear to have noticed nothing unusual. It is, however, clear from the evidence, both of the locomotive and engineering staff, that the line on Tooth's bank has generally been rough, and that after wet weather the roughness was specially noticeable ; the evidence refers to a case only a few days previous to the accident, when a driver reported that the road was in bad order, and it was then found that the line had been "knocked out a little," as platelayer Beale says. The difficulty of keeping this curve in proper form is practically admitted by the ganger, and the bank appears to be one which has been a source of trouble ever since the line was made ; the ballast under the sleepers is here of a somewhat mixed nature too, as will be seen from the table given with Chief Inspector Burt's evidence.

I can have no hesitation in attributing the accident to the combination of a comparatively high rate of speed with a rough road.

It will be noticed that the fireman is of opinion the road "gave out," or spread, under the engine, and the general appearance of the line after the accident seemed to me to point to the same conclusion. On the other hand, the first marks of any wheels being off the rails were on the inside lips of the chairs of the outer, or left, rail, where it appeared to be almost certain that the right-hand wheels must have been outside and not inside the corresponding rail. There were no marks at all of any wheel having mounted and crossed the inner rail, but it is quite possible that the whole of the weight of the engine may have been on its three left-hand wheels, and that, on a sudden lurch caused by changes of super-elevation and the displacement of the line referred to above, one or more of the right-hand wheels dropped outside the inner rail. The gauge of the line on the curve was practically correct, but it was inclined to be "tight" rather than slack, and the latter would of course be preferable, on a curve. It was no doubt only after the road had been broken up by the engine and two leading carriages running on the sleepers, that the rear carriages ran down the bank on the outside of the curve. That the injuries sustained by the passengers in those carriages were not more serious is probably due to the carriages having come in contact with the telegraph wires, which, although they ultimately gave way, held the carriages up and enabled them to slide down the bank, so that they only turned over on arriving at, or near to, the bottom of the embankment.

Fireman Minns—whose conduct after the accident, in which he had been very severely injured, is deserving of the highest praise—says the driver applied the continuous brakes before the engine left the rails. I think he must be mistaken in this. The point indicated by him is where drivers usually, and naturally, release the brakes. It is admitted, by Minns himself, that the driver had not altogether shut off steam, and the guard says he did not feel the brakes go on until the rear brake carriage, in which he was riding, left the rails, at which time the separation probably occurred between the second and third vehicles which would automatically apply the brakes. Minns speaks of a most unusual circumstance, viz.: that some of the wheels of the engine were still slowly revolving after it had turned over on its side. This may, however, probably be explained by the damage to the brake gear of the engine, as shown in the appendix, the regulator being partially open.

It would appear that, at different times, complaints have originated on the one side from drivers, of the state of the road, and on the other from the permanent-way gang, of drivers running too fast. These complaints scarcely seem to me to have assumed a sufficiently definite form to necessitate special action on the part of the officers of the Company, but it would evidently have been better had they been taken more serious notice of.

The defects in this line are largely due to its original trace, and these can only be removed by large alterations, which must necessarily involve very great expense ; such alterations are highly desirable, but the question which seems to be of more immediate interest is what should be done to guard against a similar mishap on the line as it exists ? I cannot believe that it is impossible to keep the super-elevation of the outer rails of the curves sufficiently regular for all practical purposes, but if settlement is still to be expected on Tooth's bank it would be necessary to reduce the speed on the bank accordingly. Between Heathfield and Mayfield 11 minutes should, I think, be allowed in both directions, instead of nine minutes as heretofore, and caution boards should be erected about 250 yards on either side of the spot where the run-off occurred.

It would also be advisable to add one minute to the present booked time of trains running from Heathfield to Horeham Road, and between Mayfield and Rotherfield (in both directions). What is, however, of still greater importance is that the running of the trains should be most carefully watched, any attempt to save time being put a stop to at once, and every effort being made to equalize the speed on the up and down gradients as far as it can reasonably be done.

I have, &c.,
G. W. Addison,
*Lt.-Col., R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

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## APPENDIX.

### Damage to Rolling Stock.

**Engine** 297.—*Repairs to brake gear.*

Four new brake-hanger brackets, six brake hangers straightened and re-bushed, three new cross-bars, new right-hand rods complete, left-hand rods straightened and re-bushed.

*Repairs to framing and side tank.*

Foot-plate and angle-iron straightened, right-hand cab wing straightened, new back for coal bunker, two steps straightened, new stays fitted, leading life-guards straightened, two new drag-hooks, new fire-hole door, one side tank cut to pieces and re-riveted with new ends and splasher, eight new tank-screws, and six studs fitted.

*Repairs to pipes, cocks, &c.*

Two exhaust-pipes straightened and re-brazed, three new sand-pipes fitted, four new oil-pipes fitted, three oil-cocks ground in, new right-hand sand-cock fitted.

*Repairs to carriages.*

No. 482, third-class carriage.—One new corner-pillar, three new corner rails, one bottom side spliced, one new end-panel, seven quarter-lights, three door-lights, two new step-boards, three door-panels, one body-panel, one body corner-panel, one waist-panel, one new coupling, one new buffer casting, three new step-irons, two new axle-boxes complete, one spring repaired, one headstock straightened, two draw-bars repaired, seven step-irons straightened, three pairs of wheels turned, painting, lifting, &c.

No. 88, composite carriage.—Body knocked off frame, doors broken off, glass broken, bottom rails and pillars broken, and body much twisted.

No. 622, third-class brake.—Roof very much shattered, side of carriage shattered, corner pillars broken, end compartment broken away from body, frames much strained, and cross-bars broken.

No. 217, luggage van.—Roof entirely smashed off, body ends and sides knocked out and standing pillars broken, one side of underframe broken.

No. 277, composite carriage.—End of carriage entirely broken, also roof immediately over the end, doors all broken, and corner pillars all broken, and bottom rails of carriage sprung.

No. 428, third-class brake.—Underframe very much damaged by being in collision with end of No. 277 composite. Roof damaged, doors all damaged on one side, underframe broken.

*Permanent-way renewal.*

104 sleepers, 125 chairs, 200 bolts, 100 spikes, 700 trenails, 200 keys, 49 yards rails.

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Printed copies of the above Report were sent to the Company on the 18th November.

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## LONDON, CHATHAM AND DOVER RAILWAY.

Board of Trade, Railway Department,
8, Richmond Terrace, Whitehall, London, S.W.
September 11th, 1897.

Sir,

I have the honour to report for the information of the Board of Trade, in compliance with the order of the 24th ult., the result of my enquiry into the circumstances attending an accident which occurred on August 23rd, between Sole Street and Rochester Bridge stations on the London, Chatham and Dover Railway.

In this case, as the 5.39 a.m. train from Holborn to Ramsgate (consisting of engine and tender, and 12 vehicles) was running between the above-named stations, part of the train left the rails ; the three rear vehicles broke away from the train, being about 400 yards behind the ninth vehicle when the train was brought to a stand, with the engine about 570 yards from the point where the first mark of any wheel having left the rails was afterwards found. When the train stopped, the engine, tender, and first three carriages were on the rails, but all wheels of the next six carriages were off the rails, with the exception of the trailing wheels of second-class carriage, No. 40. The three rear coaches (two luggage vans and a luggage brake), separated from the rest of the train, were zig-zagged across the up and down lines, the second van having partly mounted the one in front of it, the latter being practically destroyed. There were only a few of the Company's servants and one lady passenger in the train, and it is satisfactory to note that no one was injured.

Details of the damage to rolling stock are given in an appendix. The permanent way was completely broken up for a distance of 190 yards, and between this part of the line and the point where the train stopped there were 176 broken chairs.

### *Description.*

The scene of the accident is about three miles distant from Sole Street station, and nearly midway between the signal cabins at Cobham Park and Cuxton Road. From Sole Street to a point about 13 yards past the first mark of derailment the down line is on a gradient, falling towards Rochester, of one in 100; it is then level for 286 yards (13 chains), after which the line falls again for a considerable distance at one in 100.

Approaching Bush Bank (where the accident occurred) from Sole Street, the down line curves to the right, the radius being 60 chains, but it is straight for about 120 yards on the level portion of the line referred to above, and it then curves to the left (60 chains radius). The super-elevation of the outer rail of the curve is 3 inches.

The permanent way consists of 84 lbs. bull-headed steel rails, in 30 feet lengths; cast-iron chairs, weighing 45 lbs. each, secured to the sleepers by three trenails and spikes; creosoted sleepers, of the usual dimensions, 12 sleepers to each rail length. From a point 123 yards above—*i.e.*, on the Sole Street side of—to a point 207 yards past, the first mark of derailment, the line had been relaid on the day previous to the accident. The first mark was on the top of the thirteenth rail of the new work, and on the inside of the curve, and it appeared to indicate that some portion of the train left the rails to the right at this point; the next rail is said to have been only slightly out of place, but the rest of the new work, 190 yards or 19 rail lengths, was completely torn up. The three rear coaches stopped with their tail end 48 yards past the first mark, and 414 yards from the rear end of the remainder of the train.

The following particulars with reference to the composition of the train may be of interest. The engine was an eight-wheeled tender engine, with driving and trailing wheels coupled, and a leading bogie; the tender had six wheels; the weight of the engine and tender, in working order, would be about 76 tons 12 cwt. The carriages were :—

| ——— | No. of Wheels. | Wheel Base. | Weight. | |
|---|---|---|---|---|
| No. 63, first-class carriage ... ... ... ... | 6 | 18 ft. | 11 tons 15 cwt. | |
| „ 199, second-class „ ... ... ... ... | 6 | 18 „ | 11 „ 5 „ | |
| „ 346, third-class „ ... ... ... ... | 6 | 18 „ | 10 „ 19 „ | |
| „ 210, „ „ „ ... ... ... ... | 4 | 15 „ | 8 „ 15 „ | |
| „ 338, „ „ „ ... ... . ... | 6 | 18 „ | 10 „ 19 „ | |
| „ 40, second-class „ ... ... ... ... | 6 | 19 „ | 11 „ 12 „ | |
| „ 272, third-class „ ... ... ... ... | 4 | 13 „ 6 ins. | 8 „ 2 „ | |
| „ 1066, luggage brake ... ... ... ... | 6 | 18 „ | 10 „ 16 „ | |
| „ 114, second-class brake ... ... .. ... | 6 | 19 „ | 11 „ 17 „ | |
| „ 712, luggage van ... ... ... ... | 4 | 12 „ | 7 „ 2 „ | (Empty) |
| „ 714, „ „ ... ... ... ... | 4 | 12 „ | 6 „ 9 „ | |
| „ 25, „ brake ... ... ... ... | 6 | 17 „ 9 ins. | 11 „ 1 „ | |

### *Evidence.*

*Watson Leeming* states: I have been 34 years in the Company's service, 22 years a driver. On August 23rd I came on duty at 3.45 a.m. to work until about 5.15 p.m.; I do this turn about once in eight days. My engine, No. 5, is an eight-wheeled engine with four coupled wheels and a leading bogie, fitted with the Westinghouse automatic brake. The tender has six wheels. On the above date I left Holborn at 5.39 a.m. to run to Ramsgate, the first stop being at Faversham; the train is booked to pass Swanley at 6.7 and Chatham at 6.27, the distance between these stations being barely 17 miles. I think I passed Swanley about five minutes late, where the speed would be about 40 miles an hour; passing through Sole Street Station the speed might have been 45 miles an hour. After Sole Street the line falls towards Chatham at one in 100, and I kept steam on until I got to the up distant signal for Cobham Park box, or about one mile before arriving at the point where the accident happened. I did not open the regulator again before the vehicles left the rails. No brakes were applied on the train. Just as we got on to the bit of new road at Bush Bank I felt a slight oscillation, sufficient to make me look over the side of the engine—on the right-hand side. I then saw what I took to be the rear brake off the rails, leaning over on the six-foot side. I did not notice anything else off the rails. I at once applied the Westinghouse brake to pull the train up, and I should say we ran nearly a quarter of a mile before coming to a stand. When I felt the oscillation the speed would not exceed 45 to 50 miles an hour, not so fast as usual as I had shut off steam rather sooner than I generally do. The weight on the driving-wheels of my engine would be about 15 tons. The last time I had gone over the same road previously would be about 1.30 p.m. on the Saturday. The road where the accident occurred was in the engineer's hands for relaying on the Sunday. In such cases it is not usual to have any slackening notice after the work is completed, but if there is anything incomplete a flagman would be posted to warn drivers. I did not look back along the train while pulling up at all. The brakes acted perfectly well.

*Harry William Green* states: I have been 11 years in the Company's service, seven years a fireman. On the 23rd August I was firing for driver Leeming, and my hours of duty were the same as his. Running between Holborn and Sole Street I noticed nothing unusual in the running of the train. I should say we passed through Sole Street Station at about the usual speed. The driver would shut off steam somewhere about Cobham Park box, the speed being still about the same as usual. No brakes were applied before we knew there was something off the road. I noticed a slight oscillation of the engine, and then my mate looked over his side of the engine and said "Good God, mate, the hind brake is over on its side!" He applied the brake at once. I looked over my side of the engine. I could not see the tail of the train, but I noticed there were vehicles off the line about the middle part of the train. I was over the same line with Leeming on the previous Saturday; I noticed no oscillation then.

*Alfred Dye* states: I have been six years in the Company's service, four years a signalman, and at Sole Street for the last two years. I came on duty at 6 p.m. on the 22nd to work until 7 a.m. on the 23rd. I prefer to change duties at 7 a.m. rather than at 6 a.m., so that one of us may have breakfast at home before going on duty—it is a 12 hours post. From 12 noon to 3.35 p.m. on the 22nd the down road was closed to traffic, and in the hands of the engineers, between Cobham Park and Cuxton Road boxes. Between 3.35 and 6 o'clock two trains would pass over the down road; between 6 o'clock and the time of the accident there would be nine trains, including three goods trains and two boat express trains, and the first train passing over the road would also be an express. I noticed the 5.39 ex-Holborn, on the morning of the 23rd, pass through the station; it was then about five minutes late, the speed being no faster than usual.

*William Smith* states: I have been 18 years in the Company's service, 17 years a guard. On the 23rd August I came on duty at 5 a.m. to work until about 3 p.m. I left Holborn at 5.39, punctually to time, to run to Ramsgate. The train was marshalled in the following order from the front:—second-class, first-class, third-class, each with six wheels; third-class, four wheels; third-class, second class (No. 40), each with six wheels; third-class, four wheels; brake van (No. 1066), six wheels; second-class brake, six wheels; two parcels vans, each with four wheels; and a brake van with six wheels—12 vehicles in all. I was riding in brake van No. 1066. The automatic brakes were fitted to the whole of the vehicles on the train. I booked the time of passing Herne Hill as 5.47, right time, and we were pulled up there at the advance signals for a couple of minutes. The following are the subsequent entries in my running journal, viz., actual time passed:—Beckenham, 6.0 a.m., five minutes late; Swanley, 6.12 a.m., five minutes late; left the road, 6.25 a.m. My van was a new one, having been out about a fortnight or three weeks, and it ran remarkably steadily. The speed in no part of the journey between London and Sole Street was any faster than usual, nor had I noticed anything wrong before the accident occurred. I was sitting down on the off side of the van, looking forward through the side light, when I saw something off, towards the six-foot, in front of me. I applied the brake at once. It had not been applied before then. My van seemed to leave the road at the same moment. Immediately after applying the brake I looked back and saw that something had gone from the train. I then laid down in the bottom of the van. I was thrown about a little, but not much—I was only shaken. No one was riding in the three rear vehicles, but in the brake coach behind me there was one lady passenger (who was only slightly shaken, not hurt in any way), and three or four travelling ticket examiners. In the sixth coach from the front there were about 10 of the Company's servants, none of whom were hurt. As soon as I got out of my van I sent notices to Cuxton and Sole Street boxes, Cobham Park being closed, and then I examined the train. The first three carriages were on the rails, the next six were upright, all wheels off the rails except the trailing wheels of second-class, No. 40. Two or three pairs of wheels were off to the left, the remainder to the right, or six-foot, side. The three rear vans were zig-zagged across the up and down roads, 400 yards back, the second vehicle having partly mounted on to the first.

*Henry Matson* states:—I have been 37 years in the Company's service, and a permanent way inspector for 11 years. I am now in charge of the section from Swanley to Gravesend and to Strood. On August 22nd I sent the flagman up to Cobham Park box, about 12 noon, to let the signalman know I should break the down road after the 10.26 from Victoria had passed. We commenced work about 12.6. We took up 33 lengths (30 feet each) of the down road and relaid it with 84 lbs. bull-headed steel rails, new chairs (45 lbs. each approximately), and new sleepers. The chairs were previously attached to the sleepers at Faversham, with three trenails and spikes. There were 12 sleepers to each rail length, as we usually have now, and there were special heavy joint chairs. The old road was out, and the new road laid in in about one hour 20 minutes. There was a flagman on duty about three-quarters of a mile above the spot while the work was going on. I remained on the ground until 5 p.m. About 3 o'clock I sent the ganger of the Sole Street length back to Cobham Park box, to take my notice to the signalman, in the following terms:—"I hereby give you notice that the down road is cleared at 3.35 p.m." Before the ganger left the ballasting would be half-way up the sleepers, and the men would be packing and beating up the road; by 3.35 the road would be in good condition for running at medium speed, and the work was quite finished at 4.45 p.m. As left at the latter hour, there was ballast between the sleepers about half-way up, and the ballast would be level with the tops of the sleepers at the ends, although not very tight. It was then, in my opinion, fit for running over at full speed. The first train passed over the new work a little before 4 o'clock; my flagman was then out with a green flag, but the train was not checked in any other way. I saw it pass over the new bit of road, and the speed might have been as much as 40 miles an hour; it did not disturb the road in the least. It was a Herne Bay excursion train. The next train passed before 5 o'clock, when there was no flagman out. I examined the road after it had passed, and I found everything in its place. It was a fine day, the ballast (gravel) being in very good condition. I left at 5 o'clock, and was not on the ground again until about 8 a.m. the following morning. I then found the first 12 lengths of new road undisturbed, and 19 lengths broken up—there were no broken rails, but three were very much bent. The first mark was on the top of the thirteenth rail, on the inside of the curve, and down on to the spike in the six foot. The fourteenth rail was slightly out of place only. The curve at this point has a radius of 60 chains, and the outer rail (on the left hand) had three inches superelevation. There were 176 chairs broken in the old portion of line below the new work, chiefly under the low rail (the left hand one at that point); the sleepers were nearly all marked between the rails. I cannot account for the accident. I did not examine any of the vehicles.

*George Heaver* states:—I have been 22 years in the Company's service, and ten years as extra ganger. On the 22nd August I went with my gang to assist in the renewal of the down road between Cobham Park and Cuxton Road boxes. When ganger Ingram went back to Cobham Park cabin, about 3 o'clock, the road would, in my opinion, be fit for running over at any speed. The ballast at that time would be filled in about half-way up the sleepers between the rails, but there would not be much ballast outside. I left just before the 3.30 from Victoria passed, but I had seen the Herne Bay train go past; the ballast would then be about half-way up all through, inside and outside the rails. I examined the line after the Herne Bay train passed, and it had not moved the line at all. I arrived there again before 7 o'clock the following morning, but I was unable to see anything to have caused the accident; there were about 14 lengths of the new work still all right. I have been on renewal work of the same kind for about 20 years, and I have never known it necessary to restrict the speed of trains after the new work had been left in the same state as it was on this occasion. There would be 36 men on the work. If the accident had not occurred it would have taken us (36 men) about the whole of the following day to fill in everything complete, the traffic running as usual, the working hours being 7 to 5.30 (on Mondays) with half an hour for breakfast and one hour for dinner.

*Robert Bellamy* states:—I have been 34 years in the Company's service, and foreman of ballast trains for 23 years. On the 23rd August I left New Brompton at 5.30 for Sole Street; there were two brakes behind the engine. As I passed the new work on the down line at Bush Bank a deputy brakesman, who was in the brake with me, said: "Matson has got all his new work in, and it looks well." I put down the window and said: "It looks very well, all through." I am sure it was not out of line at all.

*William Wilkinson* states.—I have been locomotive foreman in the London, Chatham and Dover Railway Company's service for 25 years. I was on the scene of the accident about 10.20 a.m. on the 23rd. I looked through the train to see if I could find any cause for the accident, and I have also seen all the derailed vehicles since then in the shop yard, with the exception of two. The axles all through the train are perfect, and I did not see a broken spring; the gauge of all wheels was correct, and the tyres were all in good condition.

## *Conclusion.*

The results of this accident might easily have been extremely serious, and the importance of the lesson to be learnt from it will not, it is to be hoped, be ignored, because no one was injured.

On August 22nd (Sunday) the down main line between Cobham Park and Cuxton Road signal cabins was closed to traffic, from 12 noon to 3.35 p.m., to enable a length of 330 yards to be renewed, about midway between the two cabins. Soon after 12 noon a gang of 36 men commenced work, under permanent way inspector Matson, and he states in his evidence that the old road had been taken out and the new permanent way laid in by 1.30 p.m.—the chairs having been previously fastened to the sleepers. By three o'clock the replacing of the ballast taken out, and the packing of the sleepers, was so far advanced that Matson sent a notice to the signalman in Cobham Park cabin in the following terms: "I hereby give you notice that the down road is cleared at 3.35."

It may be remarked here that 3.35 was the time mentioned in the Company's traffic notice referring to the work, for the re-opening of the down line between the points named above. Matson does not say the road was actually in good condition for running when he sent away his notice, but he assumed it would be—and he says it was—safe for running over at moderate speed by the time named. Matson, probably, only acted in this respect in accordance with the usual custom, and the accident did not occur until 15 hours later; but it is utterly wrong in principle that a man should have to report "the down road is cleared at 3.35," half-an-hour before that road is ready for traffic!

Soon after four o'clock the first down train passed over the new work. A flagman had been on duty three-quarters of a mile from the spot where the work was going on, and he was still out when the line was re-opened, so that it is only reasonable to suppose the train (a heavy excursion train from London to Herne Bay) was running at reduced speed. Matson examined the road after the train had passed, and he says he is quite satisfied that it was not disturbed in the least; before five o'clock a second train passed, the flagman having, it is stated, been then withdrawn, and again the result was satisfactory.

About this time, five o'clock, the men left work, and the condition of affairs is described by Matson as follows:—There was ballast between the rails about half-way up the sleepers, and outside the sleeper ends it was level with the tops of the sleepers "but not very tight." Extra ganger Heaver, a man of 10 years' experience in his present position, says that when he left—just before the second train passed—the ballast was about half-way up the sleepers all through, inside and outside the rails. It is admitted that to thoroughly complete the ballasting, packing and finishing touches, the same gang of 36 men would have been required to work the whole of the following day, traffic being carried on as usual. Between 5 p.m. on the 22nd and 6 a.m. on the 23rd nine more trains, including two boat express and three goods trains, passed safely over this piece of line, and without, so far as I am aware, any report being made, by drivers or others, that it was in any way not in good running order.

At 5.39 a.m. on the 23rd the newspaper and parcels express train, carrying a few passengers, left Holborn for Ramsgate. The first booked stop was at Faversham, but the train was pulled up by signals at Herne Hill, and it was five minutes late when it passed Swanley station (about 17½ miles from London) at 6.12. At 6.25, when running over the new work, between the 29th and 30th mile post, the greater part of the train was derailed, with the results stated above. The train thus appears to have run the last 12 miles in 13 minutes, representing an average speed of 55 miles an hour; the time allowed in the time tables for the run from Swanley to Chatham, 17 miles, being 20 minutes, or an average speed of 51 miles an hour. I think it may be assumed, both from the section of the line and from the experience of every traveller on this portion of the railway, that the speed when running down the hill from Sole Street to Rochester and Chatham is always far in excess of the average time between those points. The super-elevation of the outer rail of the easy curve on which the accident happened, with a radius of 60 chains, is three inches, which is sufficient to show that high speed is anticipated and provided for. No blame, therefore, attaches to the driver when I say that the speed was probably much nearer 60 miles an hour than his estimate of 45 to 50 miles. He appears to have shut off steam about a mile higher up the bank, and in consequence of a slight oscillation of the engine he and the fireman looked back along the train, and then saw that there were vehicles off the rails; he says he applied the continuous brake at once, and that it acted well. Guard Smith, who was riding in the eighth vehicle, says he was the first to apply the brake, on seeing a coach in front of him off the rails; probably the action of the two men was practically simultaneous, and the brakes would also be automatically applied about the same time by the three rear vans parting from the rest of the train, for those vehicles came to a stand only 48 yards past the first mark of any wheel having left the rails.

The evidence is to the effect that the rolling-stock was all in good order—it was examined by locomotive foreman Wilkinson a few hours after the accident, and nothing was found to account in any way for the accident. I can have no hesitation in saying that the mishap was, in my opinion, caused by running trains at full speed over a road which was not at the time fully ballasted.

The accident bears a curious resemblance to two accidents which occurred last year, the first of which resulted in two passengers being killed, viz.: on the Great Northern Railway, near Little Bytham, March 7th, and on the South-Eastern Railway, between Orpington and Chislehurst, October 30th. In all three cases many trains passed over the line between the time when the men left work and the time that the accident happened; in each case the engine and three leading carriages were found on the rails when the trains came to a stand, the remaining vehicles being derailed, partially or entirely, and one or more of the rear vehicles had broken away from each train. To this it may be added that the renewal work had been carried out in each instance by thoroughly experienced men, who appear to have been quite satisfied that the lines were safe for running over at full speed.

I submit that more stringent orders are clearly necessary, to limit the discretion at present left to permanent way inspectors and gangers in similar cases. It should be distinctly laid down that trains are *never* to be allowed to run over new work *at full speed* until such work is in every respect absolutely completed, everything made good, and all finishing touches given to it. At this point, and not before, it must be left to the discretion of those immediately in charge of the work to say whether or not it is desirable to maintain a reduced speed for a further time, to enable the new permanent way to become more thoroughly consolidated.

I have, &c.,
G. W. ADDISON,
*Lieut.-Col., R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

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## APPENDIX.

### DETAILS OF DAMAGE TO VEHICLES.

**No. 210, third-class.—No damage.**

**No. 338, third-class.—No damage.**

**No. 40, second-class.—Four axle-box trays and one front broken, one plate of bearing spring broken. Step irons and centre axle-guards bent. Step board broken.**

**No. 272, third-class.—Two axle-boxes, two bottoms, one bearing broken. End step iron and draw bar bent.**

**No. 1066, brake van.—Three axles-boxes broken, four axle-box covers missing, two box-trays broken. Both centre axle-guards bent, wheel-bolts broken, brake-blocks broken.**

**No. 114, second-class brake.—Five trays and two fronts of axle-boxes broken. Half-inch and release cocks broken. Truss bar bent. Triple valve, cylinder, and cover broken. Three end panels and quarter light, one step board broken.**

**No. 712, G.V. van (Grande Vitesse).—Two axle-boxes, two trays, three axle-box fronts, four bearings, two Westinghouse hose-pipes, one truss-bar, broken. Body and under-carriage destroyed.**

**No. 714, G.V. van (Grande Vitesse).—Two end battens, one arch rail, three side panels, three end panels, one headstock, two side battens, one corner pillar, one step board, two axle-boxes, broken. Buffer-rods and draw-bars bent.**

**No. 25, brake van.—One headstock, two corner pillars, three end panels, two step boards, broken. Buffer-rods and draw-bars bent. One Westinghouse hose-pipe broken.**

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**Printed copies of the above Report were sent to the Company on the 24th September.**

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## LONDON, TILBURY, AND SOUTHEND RAILWAY.

Board of Trade (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.,
January 7th, 1898.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 29th ult., the result of my enquiry into the circumstances attending a collision which occurred about 9.35 a.m. on December 26th, at Woodgrange Park station, on the London, Tilbury, and Southend Railway.

In this case, as the Midland Railway Company's 9.31 a.m. up-passenger train, from East Ham to South Tottenham, was approaching Woodgrange Park it came into collision with a Midland Company's goods train that was being shunted across the up-main line. There was a thick fog at the time, which is stated to have come on very suddenly.

Seven passengers are reported to have complained of injury; the front guard of the passenger train was thrown forward in his van and severely bruised and shaken, and the driver and fireman were slightly shaken.

The passenger train consisted of an 8-wheeled, side-tank, engine (four-wheels-coupled), guard's van, third brake, three third-class, three first-class, three third-class, and third-class brake-carriages—coupled up in the order stated. The train was fitted throughout with automatic continuous brakes. The engine was running bunker in front. The bogie wheels of the engine left the rails, the front van and the third-class brake next to it being also derailed; no couplings gave way, but the two vehicles off the rails were rather badly damaged, the brake carriage having come into collision with the abutment of a bridge over the railway.

The goods train consisted of a goods, tank, engine, 23 goods and coal wagons and a brake van. In this train 12 wagons were knocked off the rails, two being overturned and broken up.

Details of the damage to rolling stock are given in an Appendix.

The permanent way was also slightly damaged.

## *Description.*

The Tottenham and Forest Gate joint line (Midland and London, Tilbury, and Southend Railways) joins the Tilbury Company's line from Forest Gate to Barking and East Ham, &c., at the up or north-west end of Woodgrange Park station.

The Tilbury line, running from north-west to south-east, is practically straight, and on the level, through the station to East Ham loop north junction, and the main line continues in a south-easterly direction from the junction to Barking, &c., while a loop line diverges at the junction, nearly due south, to East Ham, &c.

Woodgrange Park signal box is on the down platform (north side of the railway), and East Ham loop box is about 960 yards east of it—absolute block working is in force between these cabins. About midway between the two boxes there is a ground frame, from which points, on the down line, giving access to sidings on both sides of the railway, are worked; this frame is controlled in the usual manner by levers in the station signal box, so that when permission is given to open the points the main line signals are locked at danger. The following distances may be noted eastwards from the station box:

| | Yards. |
|---|---|
| To the up-inner home-signal ... ... ... ... ... ... | 227 |
| „ ground frame ... ... ... ... ... ... ... | 441 |
| „ centre of Winifred Road bridge ... ... ... | 451 |
| „ point of collision, up-line ... ... ... ... ... | 467 |
| „ down-line points of through road leading to up sidings | 481 |
| „ up-outer home-signal ... ... ... ... ... ... | 491 |
| To East Ham loop points, up-line ... ... ... ... ... | 919 |
| „ up-distant signal, from East Ham ... ... ... ... | 1068 |

Just at the point where the collision occurred Winifred Road crosses the railway by an overbridge, the line being here in a cutting about 10 or 12 feet deep. The arm of the up-outer home-signal is 51 feet above rail level.

## *Evidence.*

*Orton Meason* states: I have been about 10 years in the Midland Railway Company's service, and a guard about eight years. On December 26th I came on duty at 7.30 a.m. to work until about 6.30 p.m. On the above date I left East Ham with the 9.31 a.m. train to South Tottenham, and I was in the front van working under guard Moore. East Ham station is about 1¼ miles east of Woodgrange Park. Both signals of East Ham loop cabin, *i.e.*, home and distant, were "off" for us. I could only see those signals when we were almost underneath them, owing to fog, which had gradually become thicker after leaving East Ham; before leaving East Ham the fog could be seen drifting towards us. Woodgrange Park distant signal is underneath East Ham loop home signal, and it was at danger. I think steam was shut off just after passing over the junction points, but I did not feel the brakes go on before the collision occurred. I was occupied making entries in my train book after passing the signals mentioned. I was standing up when the collision happened, at the rear end of the van, and I was thrown forward over the brake handle. I was severely bruised on the ribs and body, and I had to be assisted out of my van. I should say that at that time I could see about the length of a coach, but I did not look up at all at the signals.

*William Jennings* states: I have been nearly 17 years in the Tilbury Company's service, and 12 years a signalman, and I am now a relief signalman. On December 26th I came on duty in Woodgrange Park signal box at 8.45 a.m. to work until 11 a.m., and I had then to work in East Ham loop box until 3 p.m. At 9.19 a.m. a Midland down goods train arrived at my cabin, and the driver asked me where he was to put his trucks. I told him I was a stranger, and I did not know, but the shunter coming up at the time gave the driver a signal to draw ahead. He jumped on to the rear brake and accompanied the train. I had only worked in the cabin about twice previously. The shunter called out to tell me he was going to put the train into the up siding. When the shunter got to the ground frame he rang me up, and I pulled the release lever to enable the points to be set for the through road. When the release lever is over, the outer home signal lever of the up line is locked. An up goods train arrived at 9.24, and I should pull the release lever as soon as I had put the up signals back to danger; when those signals are "off," I cannot get the release lever. At 9.33 East Ham loop box offered me the 9.31 up train *ex* East Ham, and I accepted it at once; I did not forget that the through road might be still in use, and I had rung up the ground frame previously to have the points closed, but they had not replied. I took the train on to save delay, as far as possible, thinking that the ground frame would be closed before the train arrived. I know I was acting contrary to the block rules, but I trusted to the driver not running past a signal at danger. My up home and distant signals would be at danger. When I accepted the train it was fairly clear, and I think I could then see as far as the first bridge, or about 200 yards. In my opinion, the fog only became thick after the accident occurred. I did not hear the collision take place, the wind being the wrong way, and there was an engine standing on the down line near the cabin, which was blowing off steam. I had not considered it necessary to send for the fogmen.

*Alfred Henry Pinkard* states: I have been 10 years in the Midland Company's service, all the time as a driver. I came on duty at 6.55 a.m. on the 26th December to work until 2.45 p.m. My engine, No. 1720, is an 8-wheeled side-tank engine (four wheels coupled) fitted with the vacuum brake apparatus and steam brakes on the engine. On the above date I left East Ham at 9.31 (proper time) and the engine was running bunker first. At East Ham I could see the starting and advance starting signals, and East Ham loop box distant signal, clearly by putting my head out of the cab of the engine—they are low signals. When we left East Ham we could not see more than 20 or 25 yards ahead. At the loop box the home signal was "off," which I could see by crossing to the fireman's side, and Woodgrange Park distant was "on." The speed on arriving at the distant signal would be about 15 miles an hour, on the curve, and I shut off steam directly after passing over the junction; the fog would be about the same there as at East Ham station. When I was right under the outer home signal at Woodgrange Park I saw it was at danger, and I applied the automatic brake at once—the speed at the time would be very little different from what it was at the junction, but it might be slightly higher. I had been running over the line the whole of the week previous to the accident, and I am well acquainted with the signals. I saw no fogmen between East Ham and Woodgrange Park. When we got to the outer home signal of Woodgrange Park I had no idea we had run so far. I am allowed five minutes to run from East Ham to Woodgrange Park, but that time includes time for taking water at the latter station. Before I could pull up we were into the goods train, and we struck the second wagon from the engine (I think). My mate and I were slightly shaken, but nothing more. The engine bogie wheels (the leading wheels as we were running) left the rails to the right. The engine was damaged, and I had to attend to it, so I did not go back to look at the signal again. I was on the left-hand side of the engine as we were travelling.

*Robert Perry Inkley* states: I have been 9½ years in the Midland Company's service, and six years a fireman. On the 26th I was firing for driver Pinkard, and my hours of work were the same as his. To the best of my recollection it was very foggy on leaving East Ham, and it got thicker approaching Woodgrange Park. I could see the East Ham loop signals on getting close to them. Steam was shut off before the collision, but where I cannot say. I never saw the outer home signal at Woodgrange Park until after the accident, and then I saw it was at danger. I can give no idea of the distance it was possible to see anything at that time. I had not applied the hand-brake. I was not hurt. I should say our speed would be about 25 miles an hour when the collision occurred.

*Francis George Moore* states: I have been nine or ten years in the Midland Company's service, and a guard for nearly three years. On December 26th I came on duty at 7.15 a.m. to work until 6.15 p.m. On the above date I left East Ham at 9.32—one minute late—as head guard of the train to South Tottenham. The train was made up as follows:—

Guard's van.
Third brake.
3 Third-class carriages.
3 First-class „
3 Third-class „
Third-class brake carriage.

And I rode in the rear compartment of the train. At East Ham station I could see about three coach lengths along the train, and the fog became worse as we went along. I was standing up writing when the accident occurred, and I was thrown up against the letter rack and bruised a little on the shoulder. I had seen all our signals as we passed, but only as I got to them; certainly not more than a coach length away. After the accident I went towards the front of my train and I could not see the signal (outer home) until I was underneath it, and I could only just see the signal arm then. The front van and the third brake were off the rails, the corner of the latter having struck the edge of the bridge. Both were rather badly damaged. No couplings gave way. I had arrived at East Ham soon after nine, and it was then pretty thick. I think it would have been better to have had fogmen out then, and they were certainly necessary when we left East Ham. It is very rare indeed that we are checked at the outer home signal at Woodgrange Park, and I have never known the through road to be in use at such times. I should say the speed would be from 25 to 30 miles an hour at the point of collision and greater than it was on the curve before the junction.

*Joseph Capstick* states: I have been station-master at Woodgrange Park for three years. On the morning of the 26th I was fetched from my house (part of the station buildings) at about 9.38, in consequence of the collision. I went to the scene at once, and after getting through the bridge I looked up at the signal, and I could see the arms distinctly. I did not notice the lights, although I believe the lamps were burning. I should say I could see half-way along the train at that time. My instructions to the signalman and to the foreman are to fetch the fogmen as soon as they see a fog coming on. At 9.20 I looked out of my window, and I am certain the fog was not then thick enough to require the fogmen to be out; but no doubt it was thick by the time the accident happened.

*Henry Bentick* states: I have been 22 years in the Tilbury Company's service, and a signalman 19 years. On December 26th I came out to East Ham loop signal box at about 9.9 a.m., to see if I was wanted as fogman. I asked the signalman on duty and he told me to wait. At that time I could see the signals fully 200 yards away. I saw the 9.31 up train *ex* East Ham pass, and I could see the train coming some distance off; the fog did not become thick until 9.45. The speed of the train would be about 20 miles an hour. I did not think it necessary to put down detonators.

*John Gwynn* states: I have been nearly 24 years in the Midland Company's service, and a driver for 10 years past. On December 26th I came on duty at 7 a.m. to work until about 4 or 5 p.m. I left West End sidings at about 8.5 a.m. to run to Woodgrange Park with a special goods and coal, mixed, train. There were 23 wagons and a brake van behind the engine. My engine No. 1988, is a goods, tank, engine. I arrived at Woodgrange Park at 9.20, and on getting a signal from the rear I drew down over the points of the through road to the up sidings; after a few minutes I got a hand signal to set back over the through road. It was moderately clear when I arrived, and I could see practically the whole length of my train up to the time I got the signal to set back. I did not look at the up line signals, but no doubt I could have seen the outer home if I had looked for it. After receiving the hand signal I put the train in motion at once, and pushed it across into the sidings, where the rear brake was uncoupled and left in one of the sidings, and then I went forward again, with the wagons, far enough to clear the points of the siding lines. When I came to a stand the engine would be back again on the down line. By this time the fog had become thicker, and I could not see more than 30 or 40 yards. I believe all the signals given me by the guard after I set back the first time would be by whistling. I could not see him at all. As I was pushing the train across the second time the accident took place. I heard an up passenger train coming before I saw any train, and I opened my whistle and gave a short, sharp, whistle to try to warn the driver. The collision occurred almost at the same time as I whistled. The other engine struck the second wagon from me, and 12 wagons in all were knocked off the rails, two being overturned and broken up. Neither I nor my mate was hurt at all. The guard was on the ground at the time.

*Guard White*, Midland Railway, 23 years' service, and a goods guard 11 years, confirms driver Gwynn's statements.

*Joseph Smith* states: I have been nearly 12 years in the Tilbury Company's service, and a signalman about seven years. On the 26th I came on duty at 8 a.m. to work in East Ham station signal box until 3.15 p.m. When I first went on duty it was clear, and I could see right through the station. At 9.31, when the up Midland train left, it was thicker than before, but I could still see 100 yards plainly. Just after the train left it became much worse, and five minutes later I sent a porter for my fogmen. Two men came and stayed about half an hour, but I did not require their services. I did not notice particularly the direction the fog came from.

## *Conclusion.*

The evidence as regards the density of the fog which prevailed immediately prior to the accident is very contradictory, but I think the apparent discrepancies are probably due to a fact admitted by all, viz., that the fog was everywhere very variable, both before and after the accident. Statements are thus not comparable that do not deal with identical places and moments, and some of the witnesses had but little reason for paying very particular attention to the state of the weather at the time to which their evidence refers.

When the Midland Company's 9.31 a.m. up passenger train left East Ham station the Great Eastern signalman says he could see clearly for a distance of 100 yards, while the trainmen state they could only see their signals about 25 yards away; as the former admits that five minutes afterwards he found it necessary to send for the fogmen, his recollection of the state of affairs at 9.31 is probably not so accurate as that of the trainmen. Between the station and the junction with the Barking—Forest Gate line, at East Ham loop box (about three-quarters of a mile), the line is on a rather sharp curve to the left. At the loop box the home-signal had been pulled off for the train, but Woodgrange Park distant signal, underneath the other, was at danger; the height of the two signals being, respectively, 27 feet and 21 feet above rail level. These signals were seen all right by the driver, and he says the fog would then be about the same as at East Ham station; the guards of the train are both of opinion the fog had become worse than it was previously, but signalman Bentick, who was at the junction when the train passed, states he could see the train coming some distance away!

The line from the junction to Woodgrange Park is straight, and the distance from the points of the junction to the station outer home-signal is 428 yards. The driver thinks he shut off steam when he had passed over the points, but as he admits that when he got to the outer home-signal he had no idea he had run so far he may not improbably have kept steam on longer than he thinks. On arriving at that signal he found it at danger, and he had only just applied the brakes—indeed, it is doubtful if the brakes had gone on—when the collision took place, about 34 yards past the signal.

I am satisfied it was impossible, at that time, for the driver to see the signal until he was quite close to it, owing to the fog, and therefore if he was approaching it with reasonable caution little or no blame would attach to him. He and his fireman, however, consider the fog to have been thick throughout the journey, and, under such circumstances, he ought not to have been running at a speed estimated at 20 to 30 miles an hour (the latter is probably the more correct, judging by results) when comparatively close to a station and its signals—the positions of the latter being well known to him. I certainly cannot acquit driver Pinkard of blame, although the primary and chief responsibility for the mishap rests with another.

At 9.19 a.m. a special Midland goods and coal train, consisting of 23 wagons and a brake van, arrived at Woodgrange Park signal box, on the down main line, and then drew down to the points of the through road, leading to sidings on the up-side of the railway, which are worked from a ground frame, 440 yards from the signal box in the direction of East Ham. Before the through road points can be moved it is necessary for the signalman to pull a release lever in his cabin, to free the ground frame levers, and when he does so the signals of the two main lines are locked at danger. On this occasion signalman Jennings released the ground frame as soon as an up goods train passed—*i.e.*, about 9.24—and the shunting operations of the down goods train at once commenced. While these operations were still in progress, at 9.33, the signalman in East Ham loop box offered the 9.31 up passenger train to Woodgrange Park box, and Jennings accepted it, although he had not received the usual notification from the ground frame that work there was at an end. He says he had intimated to the man at the ground frame, by gong signals, some minutes previously, that he wanted the points closed, in readiness for the passenger train, but he adds he "got no reply." Assuming that the shunting would be at an end before the passenger train arrived, he gave permission for the latter to approach—in direct contravention of the block rules, which neither require nor allow him to exercise any judgment in regard to such a matter. It was his duty to make sure the ground frame was locked up, by the lever in his own box, before accepting the second train; and he could not put back his release lever, so as to lock the frame, until he got the requisite permission from the shunter. His signals, as already explained, were necessarily in the danger position, and he says he trusted to the driver not overrunning a signal at danger; but this is quite beside the point, and any want of caution on the driver's part is not the very slightest palliation of signalman Jennings' action. He has 12 years' experience as a signalman, and I can find no valid excuse for his most serious blunder.

Before the collision took place, the down goods train had been pushed across both main lines into the up sidings, where the rear brake-van was uncoupled and left in one of the siding lines, the train being then drawn forward prior to being set back again into another siding. While carrying out the second operation the driver heard a train approaching on the up line, although he could not see it, that line being fouled by his wagons at the time, and he opened his whistle to give a warning to the other driver just before the accident happened, with the results described above, at about 9.35.

As described above, the outer home-signal arm is placed 51 feet above rail level, in order to give a good, distant, view of the signal, but this height must make it more than usually difficult to see the arm in foggy weather, and I should recommend the Tilbury Company to "repeat" the signal lower down on the post.

I have, &c.,
G. W. ADDISON,
*Lieut.-Col., R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

## APPENDIX.

### DAMAGE TO ROLLING STOCK.

Engine No. 1720, passenger.—Trailing buffer beam and left-hand trailing buffer ram broken; trailing vacuum pipe and hosepipe damaged; bunker considerably damaged; left outside framing broken near trailing end; left footplate bent, and broken near leading end; left trailing guard iron broken off; hand rail standard broken; left step broken off; injector steam pipe, feed pipe, and waste water pipe damaged; lamp irons at back of bunker broken and one head lamp smashed; back corner wash-out plug broken off.

Engine No. 1988, goods.—Left leading end of buffer beam grazed; left-hand side of tank and left-hand leading corner of footplate cracked.

### PASSENGER TRAIN.

1870. Mid-third-class.—One headstock end damaged; one door handle and one commode handle bent.

1882. Mid-third brake.—One axlebox broken; four step irons broken; two step irons bent; two stepboards broken; one side panel broken; one corner pillar badly bruised; one roof cornice damaged.

452. Mid-passenger van.—One projection completely smashed; two quarter panels and four door panels broken; one corner panel, eight door pillars and two end panels broken; three standing pillars and one cant rail broken; three door handles, three stepboards, and one step knee iron broken; seven door hinges bent and one broken; one end pillar broken; one headstock end and two roof boards damaged.

### GOODS TRAIN.

40,015. Mid-highside wagon.—Two axleboxes and brake lever guard broken; one bearing spring damaged.

58,578. Mid-highside wagon.—One solebar, two headstocks, one side rail, and two door bands broken ; eight planks damaged ; four axleguards badly bent ; two axleboxes broken and one bearing spring damaged.

82,992. Mid-highside wagon.—Axle of one pair of wheels bent; body, frame, axleboxes, &c., completely wrecked.

95,898. Mid-highside wagon.—Journal of one axle damaged ; two headstocks, three end pillars, two solebars, four longitudinals, two underdoors, two middlebearers, two diagonals, two buffer springs, two side door planks, two side rails, five quarter planks, five end planks, one buffer rod, and one buffer casting broken ; three axleboxes and four axlebox undercaps broken ; two drawbars, four buffer rods and four axleguards bent.

114,302. Mid-covered goods.—One end pillar and one axlebox undercap broken.

28,793. Mid-covered goods.—One end pillar and one buffer head damaged.

113,720. Mid-highside wagon.—Two end pillars, one headstock, and buffer cotter damaged.

110.328. Mid-highside wagon.—One buffer head broken off ; one buffer rod bent ; one end pillar and headstock damaged.

112,472. Mid-highside wagon.—One end pillar damaged.

20,354. Mid-highside wagon.—One end pillar broken.

668. J. & H. Girling's wagon.—One end pillar, one buffer casting, and one end plank broken ; two buffer rods bent.

4671. Mid-lowside wagon. — One end pillar broken.

111,818. Mid-highside wagon.—One buffer rod broken.

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Printed copies of the above Report were sent to the London, Tilbury and Southend and Midland Companies on the 26th January, 1898.

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## MIDLAND RAILWAY.

Board of Trade (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.
January 21st, 1898.

SIR,

I HAVE the honour to report for the information of the Board of Trade, in compliance with the Order of the 22nd November 1897, the result of my enquiry into the circumstances attending an accident which occurred at about 10.30 a.m., on the 17th November, at Luffenham station, on the Midland Railway.

In this case, as a special train from Leicester viâ Melton Mowbray and Manton to Peterboro', consisting of engine and tender, six horse-boxes, a brake-van and a fish-truck, was passing through Luffenham station on the down platform line the seven rear vehicles left the rails. When the engine came to a stand only two vehicles remained attached to it, the second of which had all wheels off the rails to the left ; the remainder were separated from the two front vehicles by a space of 330 to 340 yards, and were in the following position : —fourth and fifth vehicles, on their right sides foul of the up line ; sixth vehicle, with all wheels off the rails to the right ; seventh vehicle (brake-van), all wheels off the rails to the right ; eighth vehicle (fish-truck), all wheels off the rails, obliquely across the down line. The third vehicle, which had separated both from the second and fourth, was broken up, at the foot of the slope of the cutting on the left side of the line, and about a carriage length in rear of the fish-truck at the tail end of the train.

Two grooms, who were riding in the third horse-box, were very severely injured, and five others are reported to have complained of minor injury ; the guard of the train was bruised and shaken.

One horse was killed and others were injured.

Details of the damage done to the rolling stock and to the permanent-way will be found in the Appendix.

### *Description.*

Luffenham station is about four miles east of Manton Junction, the latter being on the Midland Railway line from Kettering to Nottingham.

The double line from Manton to Peterboro', running approximately from west to east, is joined at the west end of Luffenham station by the London and North-Western Company's line from Market Harboro', with trailing points on the down line ; and there are three passenger lines through the station, viz., down platform, down main and up main, the down main being in the centre. The junction between the down main and down platform lines (with facing points on the former) is only a few yards east of the junction with the London and North-Western Railway, the two down lines converging again about 180 yards east of the station; this facing junction is laid in, approximately, as a reverse curve of 12 chains radius, but owing to the use of very short switch rails—12 feet—the junction is really a worse one than these figures would indicate. In the "Appendix to the Working Time Table," the maximum rate of speed at which trains may run when entering the down platform line is limited to 20 miles an hour.

The latter line, on which the run off occurred, was relaid in 1882, with 82 lbs. bull-headed, steel, rails in chairs weighing 40 lbs. each. The permanent-way appeared to be in good order, and I found the line, where it had not been touched since the accident, as nearly as possible true to gauge. There is, in places, about 1 inch of super-elevation on the outer rail of the curve leading to the platform, but nothing much can be done in this direction.

The train appears to have passed safely through the facing-points of the junction leading to the platform line, which were in no way injured, and the first marks of derailment were found 77 yards east of Luffenham Junction signal-box, the box being nearly opposite to the junction of the two down lines at the west end of the station. These marks were found on the chairs of both rails, inside the left-hand and outside the right-hand rail. There were then wheel marks on the sleepers for 190 yards, but only three broken chairs in this length, to the fouling point of the down platform and main lines east of the station; from this point the wheel marks extended for another 200 yards, accompanied by bent switch rails and a considerable number of broken chairs; after which the road was completely broken up for 96 yards, and the six rear vehicles came to a stand here, while the engine with two vehicles attached ran forward 360 yards further with the second vehicle off the rails.

Luffenham sidings signal-box, referred to in the evidence, is 314 yards east of the junction box.

So far as the signals are concerned it is only necessary to say that the station down distant signals are about 1,000 yards west of the junction box, and there are, of course, separate home and distant signals for the two down lines.

The engine of the train, No. 64, was a six-wheeled, tender, engine, with the driving and trailing wheels coupled, the total wheel base of the engine being 16 feet 6 inches, and of the tender 13 feet; the coupled wheels were 6 feet 8½ inches in diameter, the leading engine wheels and the wheels of the tender being 4 feet 2½ inches in diameter. The engine and tender, like all the engines of the Midland Company, are fitted with steam-brakes, applied, or released, simultaneously with the vacuum-brake on the train, by one movement of the driver's brake handle. Whenever the vacuum in the train pipe is destroyed, steam is admitted to the steam-brake cylinders and the brakes are applied.

The following particulars may be noted of the horse-boxes on the train :—

| —— | Length over body. | Wheel base. |
|---|---|---|
| No. 1 ... .. ... | 16 feet 1¾ inches | 10 feet. |
| No. 2 ... ... ... | 16 feet | 10 ,, |
| No. 3 ... ... ... | 16 ,, | 10 ,, |
| No. 4 ... ... ... | 16 feet 8 inches | 10 ,, |
| No. 5 ... ... ... | 16 ,, 8 ,, | 10 ,, |
| No. 6 ... ... .. | 16 feet | 10 ,, |

The evidence appears to establish, beyond reasonable doubt, the fact that the first vehicle to leave the rails was the third horse-box, which is the property of Mr. J. Cannon. I am informed that this box was built in 1885, that it was overhauled and painted last year, and that further slight repairs were done quite recently by the Great Eastern Railway Company.

I should add that the horse-boxes had brake-pipes, but they are not necessarily required to be fitted with continuous-brakes; the two rear vehicles of the train (brake-van and fish-truck), however, had vacuum-brakes, capable of being applied by the engine-driver or guard as usual, and self-applying in the event of the train becoming divided at any point.

## *Evidence.*

*John Fawkes* states : I have been 28 years in the Company's service, 22 years a signalman and employed in the Junction Cabin, Luffenham, nearly 20 years. On November 17th I came on duty at 6 a.m., to work until 4 p.m. On the above date a special horse-box train from Leicester was offered to, and accepted by, me at 10.25 a.m. The train was given "entering section" at 10.28 and it passed my cabin at 10.29. The next cabin, on the Leicester side of mine, is Lord Aveland's siding cabin—the distance between the two being 1 mile, 28 chains. I had to send the special through the down-platform line, as the down main line was occupied at the time by a coal train. My signals—home and distant—were off for the train. I watched the train approaching my cabin and the speed did not appear to me at all excessive—steam had been shut off. I could not say whether the brakes were on or not. There is a limit of speed to 20 miles an hour entering the down platform line, and this train may have somewhat exceeded that speed, but I cannot say much about it. I did not know there was anything wrong with the train until the man at the sidings-box told me about the accident.

*Alfred Wade* states : I have been nine years in the Company's service, six years a signalman, and employed for the last five years at Luffenham. On November 17th I came on duty at 8 a.m. to work until 12 noon in the sidings-box, and from 4 p.m. until 8 p.m. in the junction-box. On the above date the signalman in the junction-box gave me the "be ready" signal for the special horse-box train at 10.25 a.m., and it was given me "on line" at 10.29. I offered the train to Ketton box at 10.25 and it was accepted at the same time. My home, starting, and distant signals were off for the special as it approached Luffenham. There was a coal train standing in the middle or through road, so I could only just see the tops of the vehicles of the special as the latter ran along the platform. I did not take any notice of the speed. When the special got past the coal train engine I could see that the wheels of the third vehicle from the engine of the former train were off the rails, and at that time I feel sure the other vehicles had not left the rails. The coal train nearly filled the middle road. I told the junction signalman at once what had occurred.

*Albert Badham* states : I have been about eight years in the Company's service, and for three years employed at Luffenham as checker and porter. I am now a station porter, and I take charge of the station in the absence of the station-master. On November 17th I came on duty at 10.15 a.m. to work until 10.15 p.m. At about 10.30 a.m. I was at the goods shed, at the Peterborough end of the down platform, when the special horse-box train was running along the platform. I did not think at all about the speed of the train, and I should probably have noticed nothing if I had not seen the third horse-box, I think, off the line—it was then off on the six-foot side. I ran after the train, but I did not see what had happened until I got down to the train, owing to the cloud of dust and sand. There was another porter with me, but as he was in the goods shed at the time he did not see as much as I did.

*Harry Ostler* states : I have been 26 years in the Company's service, and for the last seven months I have been gauger of the ballast train at Peterborough. At about 10.30 a.m. on the 17th I was standing on the landing outside the sidings cabin at Luffenham, where I had gone to tell the signalman what we wanted to do with the ballast train, which was then standing on the up line. I saw the horse-box special passing the junction, and then when it was about half-way down the platform I could see that the third box was off the rails. I told the signalman and he sent me at once to stop an up goods train which he had already accepted under the caution signal. I could not say what speed the special train passed the cabin at. I could see well over the coal wagons standing on the down through road.

*Joseph Alfred Simpson* states : I have been 30 years in the Company's service, and 18 years station-master at Luffenham. At about 10.30 a.m. on the 17th I was in the junction signal box, where I had gone to send a message, when the special horse-box train passed. I thought the train was running rather fast. It is only occasionally that "through," *i.e.*, non-stopping trains, use the platform line. The speed through the station on the down platform line is limited to 20 miles an hour. I have never had to report drivers for running through the station too fast, nor have I ever known anything to get off the road before on the down platform line. I do not recollect anything getting off at the down line junction points, and we have had no difficulty there whatever. When the train passed the cabin it was running smoothly and well. About midway between the two cabins I saw by the dust flying about that there was something off the line.

*J. W. Brookes* states : I have been 12 years in the Company's service, and two-and-a-half years a passed driver. On the 17th I came on duty at 9.15 a.m., and I left work at 6.20 p.m. On that day I was employed as driver of a special horse-box train from Leicester to Peterborough. The engine, No. 64, is a four-wheels-coupled, tender engine, fitted with the automatic vacuum brake—the engine and tender brakes are steam brakes, operated by the vacuum brake-handle. There were eight vehicles behind the engine. The automatic brake would only apply to two of those vehicles (the two rear vehicles), but all the others were fitted with brake pipes. I left Leicester at 9.40. At Melton West and Junction Cabins I was checked by the distant signals being at danger, and I used my brakes to steady the train. At Brentingby the distant signal was on and also the home signal, and we came to a stand there—the brakes being applied as usual; approaching Luffenham all signals were off. The distance from Leicester to Luffenham is 34 miles, and we arrived at Luffenham at 10.30, having stopped once and been checked twice as explained above. I shut off steam before getting to the junction distant signal, and I did not touch the regulator again before the accident. After passing the distant signal, where the speed would be about 30 to 40 miles an hour, I applied the automatic brake to reduce the speed of the train, and I should say that on passing the junction box it would not exceed 20 to 25 miles an hour. I had 20 inches of vacuum at the junction box. I have worked through the station frequently for the last nine years, generally as fireman but also as driver. I have driven non-stopping trains through the down platform line, although it is not often necessary to do so. After passing the sidings box I looked back along the train on the right hand side, when I could see nearly all the train off the line on the six-foot side. I applied my brake, but released it twice before we came to a stand. I thought it better not to stop too suddenly. After stopping I sent my mate to protect the up road, and when he returned I went back along the train. When I looked back along the train and saw the vehicles off the road I am confident that the train was already divided. On returning to my engine I found the guard there, and he asked me to try the brake. I put on the small ejector and obtained 20 inches of vacuum. I afterwards noticed that the brake pipe at the rear of the first vehicle was not coupled to the pipe of the second vehicle, but that it was on the brake plug—the two vehicles were still coupled up. The six wheels of the tender are all braked. I had 20 inches of vacuum running through the station and the gauge would go back to perhaps 10 inches each time I put the brake on. I did not touch the hand-brake when bringing my train to a stand, but when I had stopped, after the accident, I told my mate to put the hand-brake on, and he did so.

*Joseph Edward Bakewell* states: I have been 27 years in the Company's service, and a porter guard for 20 years. On the 17th I came on duty at 8.30 a.m. to work until 8 p.m. I left Leicester at 9.42, the train being made up as follows:—

Engine and tender,
G. E. Railway horse-box, No. 646,
Five private horse-boxes,
Midland brake van, No. 36,
Midland fish truck, No. 355.

The automatic vacuum brake applied to my van and to the fish truck in rear. Before starting I opened the valve in my van, and the brake was perfectly right. When we were checked at Melton, and again on being pulled up at Brentingby, the brakes acted all right. Approaching Luffenham I should say the speed would be about 30 miles an hour, and steam was shut off before we got to the distant signal. The brake gauge went to about 10 inches when the brakes were applied, before getting to the junction. I have been on the line between Leicester and Peterborough a good deal, and through the down platform road at Luffenham. I have never noticed the road to be rough at Luffenham, nor do I remember anything unusual in the running of trains through the station. I think that we were just on the level crossing when I felt a bump, and the van jumped up, but seemed to come down again on the rails. I was thrown down, and the van then began to rock. After getting up again, I got hold of the brake valve, but the vacuum had all gone. The brakes were, I am sure, 'on,' and we did not run much further. I should say the speed was about the same as usual. I have been through the platform line before without stopping. I was a good deal shaken, but I have only been off duty one day. After giving assistance to the stable boys, in the groom's compartments, I went on to the front portion of the train, but before going there, I saw that the brakes were on the wheels of my van and of the vehicle in rear. On getting to the front portion, I found that the brake couplings were parted between the first and second horse-boxes. I got in between them, and put the pipe in rear of the first box on its plug. I asked the driver to test his brake, as I thought we might want the first box to take the injured boys away in. I did not undo the carriage couplings—this was done later. The box was afterwards used, as I had thought it would be.

*John Hardy* states: I have been 12 years in the Company's service. On the 17th I accompanied the break-down gang from Peterborough, which arrived at Luffenham about 12.55. I examined the brakes of the first truck at the rear of the train, and of the brake van. They were tight on, and I had to release them by pulling the wires underneath the vehicles.

*William Henry Sturgess* states: I have been 15½ years in the Company's service, and for 8½ years past I have been employed as carriage examiner at Leicester. On the 17th I came on duty at 6 a.m. to work until 6 p.m. On the arrival of the 7.35 a.m. train from Bedford, due in Leicester at 9.7, I examined six horse-boxes which had been brought from Wigston. I found them perfectly right, wheels, brake-gear, etc. They were taken off that train, and made up into a special horse-box train for Peterborough.

*George Pollard* states: I have been 32 years in the Company's service, 22 years a ganger—my length extending from the 29½ mile post to 32 miles. The road was last renewed in 1882. No new sleepers have been put in on the down platform line for three or four years. I have had no trouble whatever in keeping the line to gauge. It is probably four months since any part of the platform road was lifted. The rails are good—I have never known the platform line to be knocked about by fast running, and nothing has been off the road there before. I was in the station about an hour after the accident. Alongside the platform there were only three broken chairs, and no rails were out of place.

*Alfred Rowell* states: I have been 18 years in the Company's service, and a ganger for 11 years. My length extends for 2¼ miles from Luffenham towards Leicester. I maintain the line at Luffenham Junction. I have done nothing to the facing points at the junction for some months past. They have given me no trouble whatever. On November 13th I pulled the switch rail of the dock siding next to the platform back a little—it had crept forward a little. After the accident I examined my portion of the road, but could find no new marks of any sort on the rails or permanent way generally.

*Robert Swales* states: I have been 25 years in the Company's service, and 19 years a foreman in the carriage and wagon department. I arrived at Luffenham about ten minutes after the accident, on my way to Peterborough. The injured boys had just been got out of the special train, and they were sent away as quickly as possible to Stamford Hospital. I then went to see where the horse-box had first left the rails. I looked for anything which might have dropped off, and so caused the box to come off, but I could find nothing at all belonging to the vehicles on the line until I got to the rear portion of the train. I looked all through the train, but could not see what was amiss, owing to the wreckage. Nos. 4 and 5 boxes were on their side, across the up road, the sixth, the van and fish truck were standing upright; No. 3 box had apparently been pushed up the bank, on its wheels. Since then I have examined all the vehicles several times. I gauged the wheels, and found them all right; no axle was bent; the axle-boxes were more or less damaged on all the vehicles, with the exception of the Great Eastern Railway box next to the engine. I examined the ground between the train and the first mark of derailment several times, but I could not find even a bolt. I thought the road looked in good order, and I saw no place where it was out of line. Two or three springs of No. 2 horse-box were gone, and they were found near the rear vehicles. I did not notice the brakes.

## *The following statements of drivers have been obtained at my request by the Superintendent of the line.*

*Charles Stead*, driver of the ballast train, states: When the accident happened to the horse-box train, my engine was standing on the up road near to the points leading from the siding to the up main line, a short distance from the east end of the up platform. I did not see anything of the train until the engine had just got on to the platform line, when I noticed either the second or third vehicle, I did not know which, was running on the sleepers. I am aware that there is a special restriction to 20 miles per hour through the platform line at Luffenham. I watched the engine of the horse-box train pass my engine, and the speed might have exceeded that a little, but it was very little, and I should judge the speed at about 25 miles per hour. I could see that the steam was shut off, but I could not say whether the brakes were on or not.

*James Rowland*, driver of the 8.35 p.m. mineral train, Staveley to Peterborough, states: When the horse-box train was approaching, I was on the foot plate of my engine looking at the time table, and did not see it until it was passing my engine. As nearly as I could tell the speed at that time would be about 25 miles per hour. I was aware that there was a restriction of speed through the platform line to 20 miles per hour, and I thought the driver was exceeding a little probably by about 5 miles per hour. When the horse-box train was coming along the platform road my fireman said, "It's an express coming," and then he remarked, "Why it's off the road." I crossed the foot plate, and looking ahead saw that there was something off the road, but as the train was passing through the platform line on to the straight road, and as the ballast was flying up I could not discern what it was that had left the metals. I could see that steam was shut off the engine of the horse-box train, but I could not tell whether the brake was on or not.

### *Conclusion.*

The evidence in this case cannot be regarded as at all satisfactory, being almost entirely of a negative character, and it gives but very slight indications of the probable cause or causes of an accident of considerable importance.

On the morning of the 17th November, six horse-boxes, which had arrived at Leicester from Wigston, were made up at the former place into a special train for Peterboro', a brake van and fish truck being placed at the rear end of the train. The train left at 9.42 a.m., and the guard says that before starting he tried the vacuum brake in his van and found it to be all right; as already explained, the only braked vehicles on the train were the van and fish truck, the horse-boxes being fitted with continuous pipes, enabling the driver to work those brakes as usual if the pipes were properly coupled. The driver had to slacken speed at Melton, twice, and at Brentingby he brought the train to a stand, the signals being against him. The train arrived at Luffenham at 10.29, having thus run a distance of 34 miles in 47 minutes, including the time lost at Melton and Brentingby, which would hardly be less than four minutes. The average running speed on the journey was, therefore, probably something like fifty miles an hour, and it would, no doubt, be much higher than this at times.

Approaching Luffenham, the driver says, most positively, that he closed the regulator before he got to the distant signal, *i.e.*, about 1000 yards east of the station, and that he did not touch it again until after the accident; the guard appears to be satisfied steam was shut off, as stated by the driver; the fireman was a young hand, and had little or no information to give me. The distant signal is on a gradient falling towards Luffenham, at 1 in 168, to within 200 yards of the junction, the line at the junction being level. The driver estimates the speed at the distant signal at 30 to 40 miles an hour, but, as drivers habitually under-estimate in this respect, and as the conditions were favourable for fast running, I am strongly of opinion it would be higher than, and not below, the "average" speed mentioned above. The entries in the train books kept in the signal cabins at Luffenham Junction and Lord Aveland's siding (the next cabin west of Luffenham), show the train to have run the last 3¾ miles before it arrived at Luffenham in four minutes. Some allowance may, however, be made for slight inaccuracies in booking the times. Between the distant signal and the station the brakes were used to steady the train, and the speed on passing Luffenham Junction signal box is variously estimated as follows: by the driver, at 20 to 25 miles an hour; by the guard, "about the same as usual;" by the signalman, perhaps somewhat in excess of 20 miles an hour. The station-master, who was in the junction box, thinks the train "was running rather fast;" while the drivers of two trains standing in the station, who only saw the horse-box train after it had passed over the junction, fix the speed as being then about 25 miles an hour. Judging from the amount of damage done, and by the distance which the train ran in a more or less derailed condition, with steam shut off, I can have little hesitation in saying that the speed at the junction must have been considerably higher than the 20 miles an hour laid down in the Company's rules as the maximum rate of speed when entering the down platform line.

The platform line leaves the down main line, by facing points, nearly opposite to the junction signal-box, the two lines converging again 330 yards east of the box. The main line is practically straight through the station, but the platform line is entered on a reverse curve of about twelve chains radius. Trains which are not required to stop at the station usually run through on the main line, but on this occasion the latter was occupied by a coal train, and the horse-box special had consequently to use the platform line. I understand the reason for leaving the coal train on the main line was that a passenger train, which had to stop at Luffenham, was following the special.

Almost immediately after the special had passed on to the platform line it was noticed by various persons, as given in evidence, that the third horse-box had left the rails towards the main line, or right-hand side. The reverse curve already mentioned is first to the left and then to the right, and the first marks on the chairs were found 77 yards from the signal-box, where the line is straight. It is impossible to state with certainty the exact manner in which this derailment occurred, but the junction is admittedly suitable only for a very moderate rate of speed, and I have already pointed out the authorized speed was certainly exceeded (although to what extent is far from clear). In passing round a curve, having little or no super-elevation of the outer rail, there is a natural tendency to lift the inner wheels of the train off the rails, this tendency increasing with the speed, and a light vehicle in such a position may be somewhat easily jerked off the rails by a sudden change of curvature, or in passing from the curve to the straight. It seems most probable that something of the kind occurred on this occasion, for there were no marks to be seen of any mounting, and crossing, of the rail, and, with the exception of three broken chairs and marks on the sleepers, this portion of the line was found uninjured after the accident. The horse-box was private property, and the closest examination by the Midland Railway staff has not resulted in the discovery of any defects in the vehicle to which the accident could possibly be attributed ; it had three stalls, and I am informed that there were two horses in the box, one on each side, the centre stall being empty.

As described above, the switch rails of the facing points are only 12 feet long, and they could advantageously be replaced by longer switches, but this alteration will not make the junction suitable for a higher speed than is now authorized. I do not think it is at all desirable to utilize the platform line for non-stopping trains, and arrangements should, if possible, be made to enable trains to be shunted clear of the main line whenever necessary. If, in an emergency, a fast train has to use the platform line, some special precautions might be taken to remind the driver that he must reduce speed, &c., by keeping the home-signal at danger until the train has been brought nearly to a stand at it. It seems to me to be confusing to a driver to lower a distant signal, which is the usual intimation to him that he may safely go forward at full speed, when the line ahead is not suitable for fast running ; but in doing so in the case under consideration, it was, I think, in accordance with the ordinary practice on other railways in similar circumstances.

The two down lines converge, as described above, 254 yards east of the spot where the first marks of derailment were found, and in the next 100 yards there are two trailing point connections on the down line ; as might be expected, much more damage was done in this part of the line, but the rails still remained in their places. Somewhere about 398 yards past the first marks referred to the third vehicle apparently became detached from the second and fourth, and all the vehicles of the train, with the exception of the first, got off the rails ; about 80 yards of line were completely destroyed, and the six rear vehicles came to a stand, in the positions already detailed. The engine, tender, and two horse-boxes, the second horse-box being off the rails, went forward 330 or 340 yards further, and the driver states that he was unaware of anything being wrong until after the train had been divided, when he saw what had happened on looking back towards the station. Although the line is on a gradient falling from the station towards Peterborough at 1 in 291, the distance run after derailment commenced, viz., about 800 yards, is most extraordinary. Of course when the train became divided the brakes should have been automatically applied to the wheels of the engine and tender, but the driver says they were not, and such would certainly appear to have been the case. The only explanation driver Brookes was able to give me was that the brake pipes of the train could not have been coupled, but the guard's evidence strongly negatives such an assumption, and independent evidence is given by John Hardy to prove that the brakes went on the two braked vehicles at the tail of the train all right. The engines and tenders of the Midland Railway are fitted with brakes applied by steam. When the vacuum is destroyed in the train pipe steam is admitted direct from the boiler to the steam brake cylinders, and the brakes go on ; when there is no steam in the cylinders the brake blocks are held off by strong springs. So long as there is a vacuum in the train pipe the steam supply is shut off from the cylinders by means of a brake plug, and means are provided which readily enable the driver to fix the plug, so that it is securely held whether there be a vacuum behind it or not; that is to say, if vacuum is destroyed the brakes would go on the train, but not on the engine. After going most carefully into the matter with driver Brookes and other drivers, I have failed to find any reason why Brookes should, on this occasion, have secured the steam plug, so as to make the steam brakes inoperative, but I can suggest no other explanation for the failure of those brakes to go on. Immediately after the accident the engine brakes were tested and found to be in thorough working order.

I have, &c.,
G. W. Addison,
*Lieut-Col., R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

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## APPENDIX.

### Damage to Rolling-Stock.

Great Eastern Horse-Box, No. 646.—One coupling-hook broken off; one hosepipe-clip broken off.

R. Lebaudy's Horse-Box, No. 2.—Two door-posts broken; floor in Groom's compartment displaced; one headstock slightly split; four axle-boxes broken; one triangular bar broken; one step-iron broken; one quarter-light broken; 29 wheel-rim bolts broken; four side-chains bent; two buffer-rods bent; two axle-guards bent; one triangular bar bent; wheel tyres cut and bruised; four bearing springs damaged.

Joseph Cannon's Horse-Box.—Two headstocks broken; one side rail broken; body completely torn off the frame and smashed up; two buffer-casting blocks split; two drawbars cracked; one buffer rod broken; three side chains broken; one brake pipe broken; four axle-boxes broken; three brake blocks broken; two wheel rim bolts broken; three buffer-rods bent; one side chain bent; four axle-guards bent; two coupling shackles bent; two triangular bars bent; wheel-flanges cut and bruised.

J. Russell's Horse-Box. — Two headstocks broken; one solebar broken; two side-rails broken; three end-posts broken; two side-door posts broken; two corner-pillars broken; two seat-bearers broken; two seat-rails broken; one door-stile broken; three door-panels broken; 15 end-boards broken; one stepboard broken; one stepboard missing; three roof-rafters broken; 14 roof boards broken; four ventilators broken; one folding-door post broken; one partition-post broken; one arm-rest broken off; one seat-back rail broken; seven inside end-boards broken; beading broken off all round; one doorlight broken; four axle-boxes broken; two triangular-bars broken; two horse hooks broken; two step-irons broken; one truss-rod broken; one wheel-rim bolt broken; one brake lever guard broken; four axle-guards bent; one drawbar bent; four side-chains bent; two buffer-rods bent; two door-handles bent; one hand-rail bent; roof canvas torn; one bearing-spring buckle broken, and bearing-spring fallen off; tyres of the wheels cut and bruised.

Sir R. Waldie Griffith's Horse-Box.—Nine roof-boards broken; six roof-stays broken; 15 end-boards broken; three door-boards broken; four door-stiles broken; one side door smashed up; one quarter-light broken; one side-door post broken; one stepboard broken; one headstock split; roof displaced; roof beading torn off all round; one door-handle broken; two side-chains broken; two step-irons broken; one bearing spring broken; two axle-boxes broken; one door-handle bent; four axle-guards bent; two triangular-bars bent; one drawbar bent; one hand-rail bent; two buffer-rods bent; one hosepipe torn; tyres of wheels cut and bruised.

R. Lebaudy's Horse-Box.—Two corner pillars broken; three end-boards broken; one stepboard broken; one window-sill broken; two quarter-lights broken; one door-light broken; one door-panel broken; beading torn off all round; three axle-boxes broken; one brake-pipe broken; one step-iron broken; one truss-rod broken; four axle-guards bent; two drawbar shackles bent; one triangular-bar bent; two bearing-springs damaged; two bearing-springs with all the plates broken; tyres of the wheels cut and bruised.

Midland Passenger Van, No. 36.—One side-rail broken; one door-stile broken; two door-panels broken; one body-panel broken: one projection damaged; corner beading torn off; two stepboards broken; one stepboard missing; two step-irons broken; one axle-box broken; one projection-light broken; one hosepipe torn; one lamp-iron forced into end panel; two hand-rails bent; four axle-guards bent; two buffer-rods bent; two drawbars bent; tyres of wheels cut and bruised.

Midland Fish Truck, No. 355.—One solebar slightly grazed; two step-irons broken; two axle-boxes broken; one coupling-shackle bent; four axle-guards bent; one bearing-spring suspending iron displaced; tyres of wheels cut and bruised.

### Damage to Permanent Way.

Broken.—338 85lb., 39lb. chairs; 39 I. S. & C. chairs; 19 crossing chairs; 7 point chairs; 8 E. L. fishplates; 48 E. L. fishbolts; 231 10 by 5 sleepers; 30 crossing keys; 300 85lb. inside keys: 800 trenails; 200 spikes.

Damaged.—1 85lb. 1 in 10 crossing 24ft. rail; 12 lengths 24ft. 85lb. rails badly bent.

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Printed copies of the above Report were sent to the Company on the 7th February 1898.

# NORTH BRITISH RAILWAY.

Board of Trade (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.,
January 1st, 1898.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 25th November, the result of my enquiry into the collision that occurred at 11.28 p.m. on the 20th idem at Falkirk station on the North British Railway.

In this case, while a train of empty wagons was standing on the down main line at this place, it was run into in rear by a down goods train from Berwick to Glasgow.

The former train was a "special," which only runs when required, and consisted of engine, tender, 44 empty wagons, and two brake vans. The latter, which was the daily goods train from Berwick to Glasgow, comprised engine, tender, 34 wagons, and a van. It is due to leave Berwick at 2.35 p.m., and to reach Glasgow at 12.20 a.m., but on the above date it was about half-an-hour behind time.

The collision was a very bad one. Guard Thomas Jeffrey, of the special empty train, who was in his van, was killed on the spot; the van and five wagons were smashed to bits, and 11 other wagons were much damaged.

The engine of the second train had its buffer-beam, frame-plates, smoke-box door bent, and brake gear broken, besides other injuries.

The débris of the wagons was piled high up and fouled both lines, and the engine of the second train forced its way through the wreckage, and came to rest with all its wheels off the rails and its fore end jammed up against the abutment of the over-bridge which spans the lines at the east end of the station. The engine, tender, and 28 wagons of the foremost train were driven forward 40 yards by the collision, and the second train was disconnected in several places. The drivers of both trains escaped unhurt, but the fireman of the second train was thrown off the foot-plate on to the ballast and was slightly bruised.

Sixty yards of permanent way were entirely destroyed, and one of the abutments of the over-bridge was damaged by the engine striking it.

## *Description.*

Falkirk is an ordinary double-sided station with two platforms and two lines passing through it. At the west end of the station there are siding connections on each line, with a cross-over road between the two lines, but at the east end, where the collision occurred, there are no sidings and no connections of any sort.

The down platform is 165 yards long, and the up platform is somewhat shorter. At the eastern extremity of the station there is an over-bridge across the lines, and 200 yards from this bridge in an easterly direction there is a tunnel.

The signal box is situated at west end of the place on the up or north side of the lines, being about 80 yards from the western end of the up platform, and about 38 yards from the end of the down platform. The place is signalled and interlocked, the down signals, which are the only ones it is necessary to refer to in this report, being as follows:—Down distant, 1,455 yards from the signal cabin; the down home, 310 yards from it in rear of the signal cabin; the down starting, opposite the cabin; and the down advanced starting, 403 yards in advance of the cabin. The interlocking is such that the distant signal cannot be lowered until the home and starting signal have been lowered, but the advanced starting signal is altogether free of the distant. There is a water column at the western end of the down platform, and the driver of the train of empties had brought his engine to rest alongside this for the purpose of taking water, the rear end of his train being then 20 yards inside the home signal. The next block post and signal box towards the east is Redding, its distance from Falkirk being 1 mile 73 chains, and absolute block working is in force between the two places.

The line through the station is on an easy curve of a mile radius, the curvature being to the left as viewed from the east.

Approaching Falkirk from Redding the line rises at an inclination of 1 in 882 up to the tunnel, while it is practically level through the tunnel and Falkirk station.

## *Evidence.*

*John Shaw*, driver, states: I have been in the North British Company's service 15 years, and I have been driver 6 years. On the 20th November I came on duty at 3.30 p.m, at Cowlairs, to work till about 12 midnight. This was the time that I expected to finish, judging from the time I left Grangemouth. I left Cowlairs with an engine and two vans, and went to Grangemouth, and I picked up a special train at the latter place. My engine was No. 500, six-wheels-coupled goods engine, fitted with the steam brake. My train consisted of 44 empty wagons and two vans, viz.: one at each end of the train. There was one brakesman with the train, and he was in the rear van. I left Grangemouth about 8.30 p.m., and reached Falkirk at 11.25 p.m. The home and distant signals at Falkirk were against me when I first saw them, and I was preparing to stop at the home signal, and had nearly done so, when it was lowered for me, so as to allow me to draw down to the starting signals. I came to a stand at the water column, taking water, and had been there about three minutes, when my engine was suddenly driven forward, as though something had run into the rear of my train. My engine and 28 wagons were driven forward about 40 yards. I at once called to the signalman to block both roads, and then went back to the rear of my train. I found a number of wagons smashed and piled upon both roads under the over-bridge. Among these wagons was the rear van, which was completely smashed. The body of guard Thomas Jeffrey was found lying outside the rails under the bridge. He was dead and was much injured. I ascertained that the 2.35 p.m. goods train from Berwick had run into my train. The engine of this train was against the abutment of the bridge. I had no conversation with the signalman at Falkirk, either before or after the accident. I cannot say whether the home signal was replaced at danger behind my train, as it cannot be seen from the water column. The down platform starting signal was lowered when I first saw it, and I intended as soon as I had taken water, to draw down to the advanced starting signal. I cannot say whether this was lowered or not, as it cannot be seen from the water column. The signalman at Redding signal box gave me the "Section clear but station blocked" warning as I passed that place.

*John Webb*, driver, states: I have been in the Company's service seven years, and I have been driver all the time. On the 20th November I came on duty at 1.45 p.m. to work till 1.5 a.m. on the 21st. I was driver of the 2.35 p.m. goods train from Berwick to College station, Glasgow. My engine was No. 655, six-wheels-coupled goods engine, fitted with the steam brake. My train consisted of 35 vehicles including the van. I left Polmont at 11.17 p.m. There are no booked stopping places for this train between Edinboro' and Glasgow. But I was stopped at Polmont by signals, and I took water there. When I reached Redding, the distant signal was at danger when I passed it, but all the others were at "clear." I received no hand signal from the signalman at Redding, and on reaching the distant signal for Falkirk that was "clear." When I got through the tunnel I saw the home signal of Falkirk, and that was clear also. The starting signal cannot be seen from the mouth of the tunnel. I saw no lights of any train in front of me. The first intimation of anything being in the way was the crash of the collision. As soon as I passed Redding and found the signals clear, I allowed my train to gain speed, and I was running about 30 miles an hour at the time of the collision. I was about 30 minutes late. The collision threw me down on the foot-plate, and my fireman fell off into the gutter on the left-hand side of the line. I shut off steam as I fell, and applied the steam brake. My engine came to rest against the east side of the abutment, on the down side of the over-bridge. I got off the engine and tried to get to the platform, but the bridge was blocked by the wagons on both roads. I went back to the engine and told the fireman to draw the fire. I was not hurt, but somewhat shaken. My engine was a good deal damaged at the fore end. The tender was disconnected from the engine, and the train was separated in several places. Very little damage done to the wagons of my train. All six wheels of my engine were off the road. The tender wheels did not leave the rails, and I do not know whether any of the wagon wheels left the rails. It was dark that night. I saw the home signal clearly just before leaving the tunnel, and it was "off." I may have spoken to some persons after the accident and told them the distant signal was "clear."

*Robert Sidey*, fireman: I have been in the Company's service altogether about six years, and about four years fireman. On 20th November, my hours of duty were the same as my driver's. I agree with my driver's statement, but I did not see the home signal at Falkirk, as I was busy firing, and I cannot say whether it was "clear" or not. I am sure that the distant signal was clear when we passed it. I fell off the engine just before it came to rest. I was just starting firing when the collision occurred. The driver, when he saw the distant signal for Falkirk clear, said to me "That's right away, mate." I cannot say for certain, but we may have been three or four minutes running from the distant signal to the home signal.

*James Main*, goods guard, states: I have been in the Company's service 15 years, and I have been goods guard all the time. On the 20th November I was goods guard in charge of the 2.35 p.m. goods train from Berwick to Glasgow. It is a daily train. My train had 34 wagons and a van. We are not booked to stop anywhere with that train between Edinboro' and Glasgow, but we were stopped by signal at Polmont. We left Polmont at 11.17, and on reaching the distant signal for Redding it was at danger, but the home and starting signal and advance starting signal were all "clear." I saw the distant signal for Falkirk and that was "clear." I did not see the home signal for Falkirk till after the accident, as the tail of my train was still in the tunnel when the collision occurred. When I first saw the home signal, about 10 minutes after the collision, it was standing at "clear." The first I knew of anything wrong was the sudden stoppage of my train. The shock put out my van lights and the first thing I did was to re-light them. I then went forward to see what had happened. I came on duty at 2 p.m. to work till about 12.20 a.m., which is the booked time for the train to reach Glasgow. We were about half an hour late at Falkirk on the day in question.

*Peter Buchanan*, signalman: I have been in the Company's service for four years and I have been signalman for two and a half years. I have been at Falkirk for about 12 months. It is a 10-hour signal box. On the 20th November I came on duty at 6.15 p.m. to work till 7 o'clock on Sunday morning. I came on duty earlier than necessary to oblige a fellow signalman. I was not due to come on duty till 10 p.m. This arrangement between myself and the other man was made without the Company's knowledge. At 11.13 I accepted the special goods train from Redding under the "Caution," as the pilot engine at Falkirk was crossing from the up side to the down at the time. I kept all the signals against this train till the pilot got across to the down side. I then pulled them all off. I was waiting for the train to arrive when I saw it coming up through the station. After this I called up Redding on the speaking telegraph and asked him what train it was, and he replied, "It is the Berwick." I turned round to put up the distant signal when the crash of the collision occurred. I received no block signals at all from Redding about the Berwick train. There are no entries concerning it in my train register book. It is not the custom for special goods trains to be notified beforehand to intermediate boxes such as Falkirk. I think the interval, from the time I lowered the signals for the special till it arrived at the water column, was about two or three minutes. It is contrary to the rules for the signalman at the box in rear to offer a second train to the box in advance until the latter has cleared back the preceding train. It is not possible to offer a second train on the dial instrument while the instrument in the box in advance is pegged to "Train on line," but the bell instrument can be used. My instrument was pegged over to "Train on line" at the time of the collision. I do not clear back for a train until after the tail light has passed my cabin. I did not clear back for the special, nor did I accept the Berwick train. The usual time for a goods train at caution, to run from Redding to Falkirk, is about 14 or 15 minutes. If the distant signal is clear the time may be reduced to 10 minutes. I should have put the distant signal to danger as soon as I saw the special train in the station. The collision occurred at 11.28. I had pulled my signals off at about 11.25. I did not exchange any block signals with the Redding signalman from the time the special was accepted under the caution until the collision. A train running from Redding to Falkirk, under the "Section clear but station blocked" signal, might do the distance in eight minutes if the distant signal were off, and the train not too heavy. But I do not think 13 minutes would be an unusual time if the distant signal were at danger.

*Alexander Johnson*, signalman: I have been in the Company's service over five years, and I have been signalman nearly three years, and I have been stationed at Redding since last May. It is a 10-hour signal box. On 20th November I came on duty at 9.30 p.m. The special train reached Redding at 11.4. At 11.14 p.m. I offered to Falkirk the special empty goods train and it was accepted same time under the caution. It left me at 11.17. It was cleared back by Falkirk at 11.21. I then offered to Falkirk the Berwick goods at 11.21 and received line clear for it at the same time. The Berwick goods passed me at 11.23. After it passed me the Falkirk signalman asked me on the speaking instrument what train it was. I replied the "Berwick goods." The next signal I received from Falkirk was the obstruction danger signal at 11.34. I had no difficulty in distinguishing between the two trains as the head lights are different on them. The tail lights of the special train were burning all right as the train passed me. Signalman Buchanan cleared back the special to me on the block instrument before I offered him the Berwick. I had made no indication to him by the bell or otherwise that the Berwick train was on until Buchanan had cleared back for the special. The dial was fixed at "Train on line" when Buchanan accepted the special under the caution, and it remained so till he cleared back for the special. It may be that Buchanan referred to the special train when he spoke to me on the telegraph, although I understood him to refer to the Berwick goods, which was the last train which had passed me. It is quite a usual thing for a train which has stopped at Redding, and gone forward under the caution, to be cleared back from Falkirk within seven minutes. My distant signal was at danger when the Berwick train passed it.

## *Conclusion.*

This serious collision was due to a breach of the rules regarding absolute block working and the use of the semaphore signals.

Signalman Buchanan, who was on duty at Falkirk, states that at 11.13 p.m. he received the "Is line clear" block signal from Redding for the special train of empties. As he had an engine to shunt he replied by giving the "Section clear but station blocked" signal, whereupon signalman Johnson at Redding allowed the special to leave that place at 11.14 p.m., after having duly warned the driver according to rule.

Buchanan at first kept his signals against the train, but when the shunting was completed, and when he had received "Line clear," for the train from the box in advance, he lowered his starting, home, and distant signals, and shortly after doing so he saw the train entering the station. Buchanan says that he then called up Redding on the telegraph instrument and enquired what train it was. The reply he received was "It is Berwick goods," *i.e.*, the down goods train from Berwick to Glasgow, which was clearly wrong. He turned round to put his signals to danger behind the train, when he heard the crash of the collision.

He asserts that he gave no "Train out of section" signal to Redding for the special, and that he received no block signals whatever from Redding concerning the Berwick goods train.

Buchanan's Train Register book, which is neatly kept and free from erasures, has the following entries for the special train :—

| | |
|---|---|
| " Section clear but station blocked " signal given to the box in rear | 11.13 p.m. |
| " Is line clear " offered to and " Line clear " received from the box in advance | 11.22 p.m. |
| Last signal recalled | 11.33 p.m. |
| " Obstruction danger " signal sent to the box in rear | 11.34 p.m. |

and there are no entries whatever in it concerning the Berwick goods train.

Signalman Johnson at Redding says that he offered the " special" to Falkirk at 11.14, and that it was accepted under the caution arrangement at the same time ; that he then lowered his signals for it ; that it passed his box at 11.17 ; that he put his signals to danger behind it ; and that he received " Train out of section " for it from Falkirk at 11.21. He at once, *i.e.*, at 11.21, offered Falkirk the Berwick goods, which was accepted at the same time. The signals were then lowered for this train, which passed his box at 11.23, the " Train entering section " signal being given to Falkirk in the usual manner. Johnson further states that after this he was asked by Buchanan on the telegraph instrument, what train it was and he replied, " The Berwick goods."

This man's Train Register book contains the following entries regarding these two trains :—

| | | |
|---|---|---|
| Special train | " Section clear but station blocked " received from Falkirk | 11.14 p.m. |
| | " Train passing Redding " | 11.17 p.m. |
| | " Train out of section " received from Falkirk | 11.21 p.m. |
| Berwick goods train | " Is line clear " offered to and " Line clear " received from Falkirk | 11.21 p.m. |
| | " Train entering section " given to Falkirk | 11.23 p.m. |
| " Obstruction danger " signal received from Falkirk | | 11.34 p.m. |

These entries are all clearly made, but Johnson's book is not altogether free from erasures.

It will be seen from the above that there is a direct contradiction between the two men, each man's statement being supported by his train book. They cannot both be right, and one or the other must be telling a deliberate falsehood. There was clearly an infraction of the rules for block working. Either Buchanan gave " Line clear " for the second train when he had no right to do so, or Johnson allowed the train to go forward when the section ahead was blocked.

It is not possible for me to express a definite opinion as to which version is correct, but Buchanan, according to his own admission, must have been doing his work in a careless fashion. He says he lowered his signals for the special at 11.25, but from driver Shaw's evidence, this was the time his train reached the water column, and if this is correct, Buchanan must have lowered his signals a minute or two earlier. Moreover, although there is no entry in his book to show when this train arrived, there is an entry showing that he offered this train to and had it accepted from the box in advance at 11.22, and it is therefore probable that he lowered the signals for it at this time. The driver's evidence proves that the special train was close to the home signal when this signal was lowered, and it therefore seems that this train arrived at the home signal at 11.22. The train was drawn down to the water column, and remained standing there till 11.28 (the time of the collision), but Buchanan failed to put the distant and home signals to danger behind it, and consequently the driver of the Berwick train, which left Redding at 11.23, found these signals off and had no warning whatever that the line was not clear.

The distance between Redding and Falkirk is 1 mile 73 chains, and the special which left the former place at 11.17 may easily have reached Falkirk at about 11.21 or 11.22, and as Buchanan would be justified by the rules in giving " Train out of section " for it, the entry to this effect in the Redding train book is probably correct. Buchanan had no right to give " Line clear " for the second train until the first train was a quarter of a mile ahead of the home signal, but the evidence of Johnson and the entry in the Redding train book go to prove that he did so. He would, however, have been justified in accepting the goods train under the " Caution " arrangement, after putting his signals to danger behind the first train.

I have made a careful examination of the train books, and the following suggests itself to me as a possible explanation of the occurrence :—When Buchanan had lowered his signals for the special, it having already been accepted by the box in advance, he expected that the train would proceed on its journey. As soon, therefore, as he saw the train approaching, he gave "Train out of section" to Redding, and gave "Line clear" for the Berwick goods. He had no reason to think that the driver of the first train would stop for water, and probably at first was unaware that he had done so. He did not put his home and distant signals to danger behind the first train because he thought it was well on its way to the next box, and he would only have to lower the signals again for the second train. Subsequently, to his surprise, he saw the first train at the water column, and not being sure which of the two trains it was, he at once made some enquiry by means of the telegraph from Redding. He probably then realised the state of affairs, and turned to put the signals to danger, but before he had time to do so, the collision occurred.

Whether or not this is a fairly correct description of what happened, it is certain that Buchanan's omission to put the signals to danger behind the first train as soon as it arrived, was a serious offence, and one that more than anything else caused the disaster.

Even if the second train was allowed by Johnson to leave Redding without the proper permission from Buchanan for it to do so, the latter's signals, if they had been placed at danger, would have protected the first train, and the collision would, in all probability, have been averted. The second train left Redding at 11.23, and it reached Redding at 11.28, thus taking five minutes to cover the distance of 1 mile 73 chains. The distant signal at Falkirk is 1,145 yards from the home signal, and if Buchanan had placed it at danger, even as late as 11.25, which is what he gives as the time of the arrival of the special, the driver of the second train would have found it at danger, and have been prepared to stop at the home signal, which he would also have found at danger. As it was, both these signals were off, and the driver was totally unprepared for any obstruction when his engine crashed into the train in front.

For these reasons signalman Buchanan must, in my judgment, be held to be largely, if not solely, responsible for this fatal collision. Buchanan's proper turn of duty extended from 10 p.m. till 7 a.m., but he had, on the night in question, come on duty at 6.15 p.m. to oblige a fellow signalman. He had, therefore, been on duty 5 hours 13 minutes, when the accident occurred. It may be remarked, that this exchange of duty between two signalmen was not notified to the Company, and the men should not have made the change without proper authority.

As to signalman Johnson, I am unable for reasons already given to say for certain whether he committed a breach of the rules for block working or not, but I am inclined to think not.

No blame seems to attach itself to driver Webb of the goods train. Finding the signals off as he approached Falkirk, and having no reason for stopping at that place, he naturally kept steam on, and approached the station at a fair rate of speed. As already stated, there is a tunnel between Redding and Falkirk, the mouth of which is only 200 yards from Falkirk station, and less than half this distance from the down home signal. When Webb emerged from the tunnel, he saw the home signal which was standing off, but he could not see the tail lights of the train in front, owing to the curve of the line, and, consequently, the first intimation he had of the obstruction was the crash of the collision.

Nor can driver Shaw, of the special, be blamed for stopping to take water if he required it. He had the right to assume that his train would be properly protected by the "block," and by the fixed signals.

Collisions of this nature raise an uncomfortable suspicion that the rules for absolute block working, and for the use of the fixed signals, are not strictly followed by some signalmen during the night. One safeguard against irregularities or mistakes of this nature, lies in the adoption of the apparatus commonly known as "The lock and block," combined with electric treadles, whereby the semaphore signals and block instruments are electrically interlocked in such a way, that no out-door signal can be lowered until the necessary block signals have been exchanged between the boxes concerned, or so long as any train remains in the section to which the signals refer. Some Companies have already adopted this arrangement, and its use is gradually extending. If it had been in existence at Falkirk, the error in block working which resulted in this fatal collision, could hardly have occurred.

I have, &c.,
H. A. Yorke,
*Lieut.-Col., R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

## APPENDIX.

### PARTICULARS OF DAMAGE TO ROLLING-STOCK.

North British wagon No. 42496.—Totally destroyed.

North British wagon No. 42640.—Totally destroyed.

North British wagon No. 42742.—Totally destroyed.

North British wagon No. 44871.—Totally destroyed.

North British wagon No. 51860.—Totally destroyed.

North British goods brake van No. 303.—Totally destroyed.

North British wagon No. 47730.—End door cross-rails, cleading, draw-bar hook, end pillar, and three end battens broken, and locker-bar and one coupling-link bent.

North British wagon No. 37498.—Two trams, headstock, two diagonals, two longitudinals, door sole-rail, two buffer-clamps, two side cope-rails, two buffer-hoops, one axle-box, one top angle-iron, one bearing-spring shoe, and end door-rails and cleading broken, and one locker-bar, two guard-plates, door hinges, side and end top cope-irons, and strap plates bent.

North British wagon No. 45974.—Four end battens, two end pillars, one side cope-rail, one side sole-rail, side door cleading, and two draw-bars broken ; and four guard-plates, two hoops, brake-lever, and side door hinges bent.

North British wagon No. 22630.—One side and two end battens, and one end pillar broken, and one side knee bent.

North British wagon No. 17958.—One axle-box broken.

North British wagon No. 25361.—One side and three end battens broken, and side coping bent.

North British wagon No. 27407.—Side cope-rail damaged.

North British covered van No. 51628.—Four boards of end lining broken.

North British cattle-wagon No. 18957.—One buffer-block, headstock, and end pillar damaged, and one corner knee bent.

North British cattle-wagon No. 25458.—One buffer-block and one axle-box broken.

Glasgow and South-Western Railway wagon No. 862.—Brake-gear broken off.

North British engine No. 655.—Angle-irons, platform plates, three small steps, three brake-hanger studs, two brake hangers, and two cylinder relief-cocks broken, and front buffer-beam, frame plates, two footsteps, plates, smoke-box door, and relief-cock rods bent.

North British tender No. 655.—Buffing-block and footstep broken.

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Printed copies of the above Report were sent to the Company on the 15th January, 1898.

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## NORTH BRITISH RAILWAY.

Board of Trade (Railway Department),
Richmond Terrace, Whitehall, London, S.W.
January 18, 1898.

SIR,

I HAVE the honour to report for the information of the Board of Trade, in compliance with the order of the 20th December, the result of my enquiry into the collision that occurred on the 11th idem at Whitburn station on the North British Railway.

In this case the 7.25 a.m. train from Morningside to Bathgate was stopped on the falling gradient outside Whitburn station, and the engine after being uncoupled went into a siding to pick up a horse-box. While the shunting operations were in progress, the train, owing to the brakes not being sufficiently applied, moved down the incline and came into collision with the engine as the latter was moving out of the siding.

One passenger complained of being shaken, and the guard in charge of the train was slightly injured.

The train consisted of engine, tender and five carriages, and it was fitted throughout with the Westinghouse automatic brake.

The effect of the collision was to break the two buffer castings on the front vehicle and several windows of the train.

None of the wheels left the rails and no damage was done to the permanent way.

### *Description.*

The line from Morningside to Bathgate is single, and is worked upon the electric tablet system. Whitburn is not a tablet station, and is therefore not used as a passing place for trains. It possesses one platform and some sidings.

The siding, in which the horse-box which had to be attached to the train in question was standing, is entered through points at the south end of the station ; these points being facing to trains travelling from Morningside in the direction of Bathgate.

The station is provided with home and distant signals in each direction. As no trains cross each other here, the normal position of the signals is "off," and they are only placed at danger when any shunting has to be done. The points and signals are operated from a ground frame situated on the platform.

Approaching Whitburn from the south, the line falls at an inclination of 1 in 71.

The following rules of the Company regarding the conditions under which the engine may be detached from a train, when the latter is standing on an incline, are of importance, viz.:—

**Detaching of Trains upon Inclines.**—1. *It will be the duty of every Engine-Driver, Fireman, Guard, Porter, or other Servant of the Company who may require to uncouple the Engine from the Train, or to separate the Train itself for shunting or other purposes when standing upon an Incline, to first ask and obtain the permission of the Head Guard.*

2. *The Head Guard will be responsible, before giving such permission, for seeing that in addition to the application of the Brakes any other precautions necessary are taken to prevent the separated portion of the Train from moving.*

**223A.**—*When horse-boxes, carriage-trucks, or other vehicles have been detached from a Passenger Train, the Guard must, unless some of the Station staff are present to take charge of them, see they are properly secured so as to prevent their moving. If the Engine be detached for the purpose of putting off or taking on vehicles, or for any other purpose, the Guards must keep their Hand-brakes on to prevent the Train moving during the time the Engine is away from it.*

## *Evidence.*

*Menzies Bayne Thomson*, station-master : I have been in the Company's service between 18 and 19 years, and I have been station-master at Whitburn about four years. On December 11th I was on duty at Whitburn when the 7.25 a.m. train ex Morningside arrived. It was due at 7.52 and arrived at about right time. There was a horse-box, with one horse in it, in the loading bank siding which the train had to lift. I was in my office and heard a crash, and I at once ran out to see what had happened. I ascertained that the engine had been detached from the train at the home-signal for the purpose of picking up the horse-box, and that the train, instead of remaining stationary, had followed the engine into the siding and collided with it. I saw six windows broken in the train, and the sockets of the two leading buffers of the front van cracked. About 10 to 15 passengers were in the train. No complaints were made to me personally, but one woman complained to the porter as she left the station. The engine backed the train out of the siding to the place from which it had moved, and the operation of attaching the horse-box was completed, and the train went forward in the ordinary course, leaving Whitburn at 8.13 a.m. I asked the guard if he had tampered with the brake, and he said "No, I have not touched it." He added that he did not know there was a horse-box to pick up. The line is worked on the electric tablet system, and Whitburn is not a tablet station. Trains are not stopped at the home-signal unless there is something to lift out of the sidings. It was daylight at the time, and the guard, if he had looked out, could have seen what was going on. The horse-box had been left the previous night, and the driver of the train on the morning in question had been acting as fireman of the train that left the box. The guard of the train in the morning was not the same guard who was with the train that left the horse-box. The driver in question knew what had to be done.

*John Macgee*, porter : I have been in the Company's service about eight years, and I have been about 11 months at Whitburn as porter. On December 11th I came on duty at 6 a.m. to work till 6 p.m. I was in the signal box when the 7.25 train ex Morningside arrived. It arrived at 7.52. It had to pick up a horse-box from the loading bank siding. I stopped the train at the up home-signal. The engine was uncoupled, and I set the points for the siding, and then went into the yard. I was giving the driver a hand-signal for him to push the horse-box along the siding, so as to clear the crossing of No. 2 siding. I did not notice the train coming after the engine until I heard the noise of the collision. Five or six windows were broken, and three or four doors were forced open and damaged. A woman complained to me of a black eye. I had no conversation with the guard of the train. We do not often have anything for a train to pick up out of the siding. It may happen once in three weeks or a month. The home-signal is, as a general rule, kept off, and is only put to danger when there is some shunting to be done. The box had been left the night before, and I told the fireman, who was the driver of the next morning train, that it would go forward by the 7.25 a.m. train. There was an interval of about three or four minutes after the train came to a stand and the collision.

*John Heaps*, driver, states : I have been in the Company's service 15 years, and I have been passed as driver 12 months last October. On the 11th December I came on duty at 6.25 a.m. at Morningside to work till 6.25 p.m. My engine was No. 247*a*, a four-wheels-coupled passenger engine, with a four-wheeled tender. I was working the 7.25 train ex Morningside. The train consisted of five carriages, including a van. I was running engine first. On reaching Whitburn station I found the distant and home signals at danger. I stopped at the home signal. I saw the porter on the platform shift the points for the loading bank siding. I told the fireman to uncouple the engine and I then moved away from the train a short distance and called to the fireman to come. I then went with my engine into the loading bank, and the porter gave me a hand signal to push the horse-box back clear of the crossing. I did this, and was coming back out the siding, when the train collided with the tender of my engine. I had no idea the train was following us into the siding. No damage was done to my engine. Neither I nor my fireman was hurt. I had no conversation with the guard. I heard the fireman let the air out of the pipe when he uncoupled the engine. The engine was fitted with the Westinghouse brake. The brake pipe was properly connected between the engine and train before starting. The brake was tested by me before starting. The guard did not test the brake. I was fireman of the train the night before which left the horse-box at Whitburn, but I did not know it was to be lifted by the 7.25 a.m. train the following morning. I know the instruction in the Appendix which lays down that a driver should obtain the permission of the guard before proceeding to separate the train for shunting purposes when standing on an incline. I did not ask the guard's permission on this occasion. I think about three minutes elapsed from the time the engine was uncoupled to the time of the collision. I saw the train when it was about 7 feet away from my engine. I at once put the engine in forward gear and gave her steam, and the engine had just begun to move forward when the train struck. It was daylight at the time and there was no fog.

*David Pollock*, fireman, states: I have been in the Company's service four and a half years, and I have been fireman two years and four months. On the 10th December I came on duty at 9.45 p.m. to work till 9.45 a.m. During the night I work in the shed at Morningside as cleaner, and I work one trip on Saturday mornings as fireman of the 7.25 a.m. passenger train to Bathgate. When we reached Whitburn on the 11th December, we found the home and distant signals at danger, and we therefore knew there was something to be picked up. We came to a stop at the home signal. I got orders then from my driver to couple off. I did so, and after separating the engine from the train I opened the tap on the air-pipe of the train to let the air out and put the brake on. I opened it twice; I heard the air escape each time, and I believe I put on the brake. I do not know whether the guard tested the brake before the train started. As soon as I had uncoupled the engine, the driver moved his engine forward a yard or two and called out to me to join him. We went into the yard and the porter signalled to us to push the horse-box up the siding clear of the crossing. We did this, and were coming back, when the train ran into us. I did not see the train till it struck us. I asked the guard why he had not applied his hand-brake. He said he did not know there was a horse-box to lift, and he did not know the engine had been uncoupled. The time between coupling off the engine and the collision would be about three minutes. It was quite daylight at the time. When I coupled off and the engine went forward a short distance, the train remained at a complete standstill. After seeing this to be the case I rejoined the engine.

*James Douglas* states: I have been in the Company's service for five years, and I have been acting as goods guard for two years. I act as passenger guard occasionally on Saturday mornings. On 11th December I came on duty at 6.55 a.m. to work as guard in charge of the 7.25 a.m. train from Morningside to Bathgate. The train consisted of five carriages, including two brake composites, one at each end of the train. It was fitted with the Westinghouse brake. I tested the brake as soon as the engine was coupled on, about a quarter of an hour before the train started. We had to stop at three places between Morningside and Whitburn, and the brake was working all right. No one told me that there was anything to lift at Whitburn. On approaching Whitburn the distant and home-signals were at danger, and the train came to a stand at the home signal. I thought the porter had forgotten to draw the signal. It did not strike me that there was anything to pick up. I do not think we had been stopped more than a minute before the train began to move. The driver used the air brake to stop the train, but I never noticed whether he released it again or not. I did not know the engine had been detached from the train. When the train began to move I thought we were going into the platform. The first I knew of anything being wrong was when I was knocked down in the van by the collision. I hurt my thumb and was off duty for two or three days. I had worked the same train once before previous to the accident, but there was nothing to pick up then. But I have dropped and picked up wagons at Whitburn when working goods trains. When the carriages began to move I was making up my book, and I thought the train was going down to the platform. It was a grey morning, but I could have seen the engine go into the siding if I had looked out of the window.

## *Conclusion.*

This slight collision was due to carelessness on the part of those in charge of the train, and more particularly of guard James Douglas.

The train was stopped on the gradient of 1 in 71 at the up home-signal, which is situated about 150 yards from the south end of the platform, and the driver having ascertained that there was a vehicle for him to take out of the siding, told his fireman to uncouple the engine. Fireman Pollock did so, at the same time permitting some of the air to escape from the train pipe for the purpose of applying the continuous brake on the carriages. This man declares that he turned the tap of the air pipe twice, and that each time he heard the air escape from the pipe, and that he was therefore confident that the brake was on and the train secure. No one seems to have told the guard what was being done, and he remained in his van.

The engine then went into the siding, the points having been opened by the porter. Some shunting was necessary in order to enable the engine to get in front of the horse-box. While this was in progress the train, which had been left on the gradient, commenced to move forward by gravity, and running into the siding met the engine as the latter was moving in the contrary direction. Just before the impact took place, the driver saw the train approaching him, and he at once put his engine in forward gear, and thereby reduced the shock of the collision.

Driver Heaps was clearly to blame for having failed to obtain the permission of the guard before proceeding to separate his engine from the train.

Fireman Pollock did not allow sufficient air to escape from the train pipe, when he uncoupled the engine. The continuous brake was consequently not applied with sufficient force to the wheels of the train; and Pollock's neglect in this respect contributed to the mishap.

But the principal responsibility must rest upon guard James Douglas, whose duty it was to look after the safety of his train. This man remained in his van, and paid no attention whatever to what was happening. When the train began to move he could have stopped it at once by putting on his hand brake, or, if this was not sufficient, by opening the air valve in his van, and thereby applying the Westinghouse brake.

His excuse is, that he was unaware that the engine had been detached, or that there was any shunting to do. And when the train began to move, he says he thought it was being drawn down to the platform by the driver.

But the mere fact that the train was stopped at the home-signal should have been sufficient indication to him that there was some work to do. For as already explained, the station not being a passing place, the signals are only placed at danger when shunting has to be performed. Moreover, if he had merely put his head out of the window he would have seen what was going on.

The accident would not have occurred if these men, or any one of them, had performed his duties in a satisfactory manner.

Driver Heaps had been on duty about 1½ hours, and guard Douglas about one hour at the time of the occurrence.

The evidence of fireman Pollock shows that he had worked from 9.45 p.m. on the 10th December till about 6.45 a.m. on the 11th, as cleaner in the shed at Morningside, and that it was then his duty to work as fireman till 9.45 a.m., making a continuous tour of duty of 12 hours. In the interests of public safety I am bound to express my disapproval of such an arrangement as this.

I have, &c.,
H. A. YORKE,
*Lieut.-Col., R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

**Printed copies of the above Report were sent to the Company on the 1st February, 1898.**

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## NORTH-EASTERN RAILWAY.

Board of Trade, Railway Department,
8, Richmond Terrace, Whitehall, London, S.W.
July 31st, 1897.

SIR,

I HAVE the honour to report for the information of the Board of Trade, in compliance with the order of the 19th inst., the result of my enquiry into the collision that occurred on July 10th, at the Central station, Newcastle-on-Tyne, on the North-Eastern Railway.

In this case, as the 6.55 p.m. passenger train from Blackhill was entering No. 9 platform, at the west end of the station, it ran into a light engine which was standing at the platform; the latter was driven forward a few yards, and came into collision with the rear of the 7.55 train to Annfield, which was also standing at the same platform.

Seventeen passengers in the latter train, and one passenger in the Blackhill train, are reported to have complained of shock and slight injuries.

The Blackhill train consisted of a side tank engine, No. 1765, with leading and driving wheels coupled and a trailing bogie, running chimney in front, and 8 vehicles, fitted throughout with the automatic Westinghouse brake.

There were 8 vehicles on the Annfield train, the engine being detached at the time the collision occurred.

The light engine, No. 1788, was of a similar class to that on the Blackhill train.

No wheels left the rails, and the damage done was quite unimportant, viz.:—

Engine 1765: Fore buffer beam bent and rivets broken.
Engine 1788: Back buffer beam and both inside frames bent, right outside frame bent and broken, angle iron and rivets of tank bottom broken.

## *Description.*

The line alongside No. 9 platform is one of the through lines of the Central station, and the admission of trains into the platform from the west is regulated by two signalmen, one stationed in No. 3 cabin just outside the platform, and the other in No. 2 cabin inside the station and about 200 yards east of No. 3. Block working is not in force between these cabins, the Company having applied for, and obtained, exemption through the station from the general order made by the Board of Trade, under the Regulation of Railways Act, 1889.

No. 2 cabin has an inner and an outer home signal, for No. 9 platform, both being underneath the station roof, and a distant signal which is fixed on the same post as the home signal of No. 3 cabin, the latter being slotted or controlled by No. 71 lever in the former cabin. The outer home signal is also known as No. 9 platform up intermediate signal.

The mode of working appears to be as follows :—When the signalman in No. 3 has a train for the station he calls the attention of the man in No. 2, with the usual bell signals, and the latter shows on indicators fixed in No. 3 cabin which platform the train is to be admitted to. If that platform is quite clear, all signals of No. 2, including the distant signal, are lowered; if the platform is only clear up to No. 2 inner home signal, the outer home is taken off and the slot on No. 3 cabin home is released, the distant signal remaining at danger; if the platform is only clear up to No. 2 outer home signal—*i.e.*, when there is any obstruction between the outer and inner homes—the outer home remains at danger until the train has nearly come to a stand at it, the slot on No. 3 home being alone taken off in the first instance. The weak point of this arrangement is that, owing to the sharp curve into the platform and the fact of No. 2 cabin signals being inside the station, the driver is unable to see the outer home until he is quite close to it.

An order has been in force since June 1894, that "the speed of all trains entering the "platform lines at the west end of the Central station must be reduced to 5 miles "an hour."

The following distances should be noted from No. 3 cabin home signals eastwards, viz. :—

| | | |
|---|---|---|
| To the centre of No. 3 cabin ... ... ... ... ... | 52 | yards. |
| To the outer end of No. 9 platform ... ... ... ... | 90 | „ |
| To the outer end of the station roof ... ... ... ... | 159 | „ |
| To No. 70, outer home signal, No. 2 cabin ... ... ... | 194 | „ |
| To the point of collision ... ... ... ... about | 234 | „ |
| To No. 69, inner home signal, No. 2 cabin ... ... ... | 257 | „ |

The train for Annfield was standing with the rear vehicle just outside No. 2 inner home signal, and the light engine was a few yards from it with its tail end about 40 yards inside No. 2 outer home signal. The latter signal had not been pulled off for the train *ex* Blackhill when the collision occurred.

## *Evidence.*

***Ralph Potts*** states : I have been 35 years in the Company's service, and assistant station-master at Newcastle for about 24 or 25 years. On the 10th July, at about 7.40 p.m., I was on No. 8 platform, and I saw the engine of the 7.41 *ex* Blackhill coming into No. 9 platform; I thought the train was coming at too high speed, seeing that there was another train standing in the same platform with an engine behind it. I at once blew my whistle as loudly as I could, to attract the driver's attention; the driver of the light engine also whistled, and as he did so the third time the train engine struck his engine and knocked it forward a few yards into the tail of the 7.55 train for Annfield. No wheels of the engines or trains left the rails. The Blackhill train has of late usually come into No. 10 platform on Saturdays, but sometimes it is brought into No. 9. On a Saturday night the Annfield train would generally be at No. 9, but it might be a little farther ahead than it was on this occasion. The circumstances were not very exceptional as regards these particular trains, but they would be as regards other trains using the same platform. It is also not uncommon on Saturday evenings for a light engine to be where it was on this occasion.

***John White*** states : I have been 26 years in the Company's service, and for 10 years night station-master at Newcastle Central station. At about 7.40, on the 10th July, I was on No. 8 platform when the signalman in No. 2 cabin asked me if he could bring the Blackhill train into No. 9? I saw that the Annfield train and light engine were well inside the outer home signal, and so I told the signalman he might. I did not see the Blackhill train coming in, as I was then attending to other duties. The train had previously used both Nos. 9 and 10 platforms on Saturdays, probably the latter the more frequently of the two. It is an uncommon thing for a train entering No. 9 to find anything standing where the light engine was, although it would occasionally occur. I presume drivers are quite aware that the line may be occupied between the outer and inner home signals.

*Charles Thomas Maltby* states: I have been 22 years in the Company's service, a signalman all the time, and at Newcastle for 8 years. On the 10th July I came on duty at 2 p.m. to work until 10 p.m. in No. 2 cabin. I asked Mr. White, the night station-master, if I had to bring the Blackhill train into No. 9, the platform where it usually comes, No. 10, being about to be occupied by other trains. I am only on duty on Saturdays at the same hour once in three weeks. So far as my experience goes the Blackhill train almost invariably uses No. 10. When the Blackhill train uses No. 9, there is generally nothing standing outside No. 69 signal, as there was on the day of the accident. I can confirm what Mr. White has said as to the general custom n this respect. I saw the train about 40 or 50 yards before it arrived at No. 70 signal, and it struck me that the speed was rather fast; I did not lower No. 70 signal in consequence. I generally lower that signal, to let the train draw forward as far as possible, when it has nearly come to a stand. I had taken off No. 71 (control) signal, but I had not, of course, pulled off my distant signal, No. 72. The man in No. 3 cabin had asked me on the telephone, after I had given him the platform indicator for No. 9, whether I meant the train to use No. 9, and not No. 10 as usual?

*Thomas Wise* states: I have been 29 years in the Company's service and 24 years a signalman. On the 10th July I came on duty at 2 p.m., to work until 10 p.m., as relief signalman in No. 3 cabin, Newcastle. I had been employed in that cabin for seven weeks. Station working is in force between No. 3 and No. 2 cabins, under special regulations. At about 7.39 I gave No. 2 the usual bell signal for the 6.55 train *ex* Blackhill, and I gave him the train on the indicator. As my indicator then shewed the train was to run into No. 9, instead of No. 10, where I think it generally goes on Saturdays, I asked on the telephone if it was really to go to No. 9, and was told "Yes." I lowered all signals for the train, inner and outer home, and distant signals. It was a dull heavy evening, and I could not distinguish anything in the station. I saw the train pass my cabin, when the speed might be from 10 to 15 miles an hour. I don't think it would be faster than usual. Steam had been shut off, but I cannot say whether any brakes were on.

*Robert Thompson* states: I have been 21 years in the Company's service, and a driver for 7½ years. On July 10th I came on duty at 2.55 p.m., to work until 2.55 a.m. on the 11th. We do that shift once or twice a week. My engine, No. 1788, is a side tank engine, with leading and driving wheels coupled and a trailing bogie, fitted with the Westinghouse brake. I arrived in No. 8 platform from Sunderland at 6.5 p.m., being afterwards crossed over to No. 9, at No. 3 cabin, where I took water at the outer end of the platform. After doing some shunting operations I got instructions from the shunter to go up near to the tail of a train in No. 9, and stand there until another train had been backed on to my engine for us to take to Annfield. That arrangement was not, however, carried out, in consequence of the Blackhill train being brought into No 9. At about 7·41 I saw the Blackhill engine just entering the covered portion of the station, when it would be about 70 or 80 yards from me. I did not think they would be able to stop clear of us, and I called out to my fireman to whistle and to hold on. He gave three or four sharp whistles. I was in the 6-foot way at the time. The speed of the Blackhill train would be about 10 or 12 miles an hour when it struck my engine. My fireman was not hurt in any way, and no wheels left the rails; but my engine was damaged somewhat. My engine was only a few yards clear of the van of the train in front of me. My engine was not blowing off steam, nor was any other engine that I could see. I quite understand that on entering No. 9 platform, from the west, I have to be prepared to stop at No. 2 cabin outer house signal, if it is at danger; but personally I have always been given a caution if there was anything standing just in front of that signal. The caution would be from one of the station staff, and sometimes from the signalman. If it is at all thick we cannot see the signals on No. 9 line until we are quite close to them, and there was a notice issued two or three years ago that the speed was not to exceed 5 miles an hour entering the platforms. There were no brakes on my engine at the time the collision occurred.

*Thomas Morales* states: I have been 15 years in the Company's service, five years a guard. On the 10th July I came on duty at 1.30 p.m., to work until 12 midnight. At about 7.35 on the above date I went to No. 9 platform, to join the train due to leave for Annfield at 7.55. There were eight vehicles on the train, the rear vehicle being a third-class brake carriage. The engine had then gone away to get water, but the air brakes had been gently applied to the wheels of the vehicles before it left. My hand brake was not "on." There was a light engine a few yards from the tail of the train. About 7.40 I heard violent whistling, and I looked round just as the Blackhill train was coming into collision with the light engine. I called out to my passengers to stand clear of the train. The light engine was knocked against my train, and the latter went forward about two compartments' length. My train was not damaged. The back of the train was pretty well filled at the time, and before we left (a quarter of an hour afterwards), several passengers had complained of being shaken, &c.

*John Copland* states: I have been 21 years in the Company's service, 7 years a driver. On the 10th July I came on duty at 8.50 a.m. to work until 7.41 p.m. My engine, No. 1,765, is a side tank engine, similar to No. 1,788, and fitted with the Westinghouse brake. I left Blackhill at 6.55 p.m. to run to Newcastle, where we were due at 7.41. We stopped at all stations and the brakes were all right. I had eight vehicles behind the engine, the train being made up exactly as usual. Approaching No. 3 cabin at Newcastle, all signals were off, and I had shut off steam a good bit before I arrived at No. 3 distant signal. At the inner home signal of No. 3 cabin I applied the Westinghouse, my mate having his handbrake "on" at the time, and the speed would not then exceed 8 miles an hour. At the outer end of No. 9 platform, I released the automatic brake. Just as I got inside the roof I saw the outer home signal of No. 2 cabin at danger, and I applied the Westinghouse at once, reversed the engine, and opened the regulator, but probably steam was not on before we struck. I know that I may find an obstruction immediately ahead of the outer home signal of No. 9 platform, but I never have found anything there before. The signal always has its lamp alight. Entering other platforms from the west end I have always been cautioned by one of the station staff, or occasionally by a signalman, if the platform was occupied. I am aware that the speed on entering should not exceed 5 miles an hour, and I don't think it did on this occasion.

*James Brodie* states : I have been 8 years in the Company's service, 6 years a fireman. On the 10th July I was firing for driver Copland and my hours of work were the same as his. Running from Blackhill to Newcastle the engine was chimney first, and the driver's side of the engine is on the right-hand side. Approaching Newcastle steam was shut off passing Shot Factory cabin, and the Westinghouse brake was applied before we got to the inner home signal of No. 3 cabin. I applied the hand-brake "hard on" just as we entered the platform, when the speed would be between 10 and 12 miles an hour; we generally come in at between 4 and 5 miles an hour speed.

## *Conclusion.*

The evidence given in this case by assistant station-master Potts, signalman Maltby, driver Thompson, and fireman Brodie, makes it quite clear that the Blackhill train was brought into the station at too high a rate of speed—considerably above the 5 miles an hour limit fixed by the order quoted above—in consequence of which driver Copland was unable to pull up his train, when he found No. 2 cabin outer home signal at danger, and ran past the signal about 40 yards and collided with a light engine which was standing there, with results already detailed. The responsibility for the occurrence rests entirely upon driver Copland, but there are certain circumstances which may fairly be taken into consideration as affording some, although they are but slight, excuse for his carelessness.

The accident occurred on a Saturday evening, and on Saturdays it is usual to run the train into No. 10 platform, where there is no outer home, or intermediate, platform signal; a driver having once seen No. 3 cabin signal lowered, knows that No. 10 line is clear up to No. 2 cabin. For trains entering No. 9 line, the lowering of No. 3 cabin signal may or may not have the same meaning as it has in the case of No. 10 platform ; the only certain intimation given to the driver is that the line is clear up to the *outer* home signal of No. 2 cabin. That signal is 36 yards inside the station roof, and, as stated above, owing to the curve, &c., there is a very poor view indeed of the signal or of anything standing in front of it It is said to be a most unusual thing to bring a train into No. 9 when the line is occupied between the inner and outer home signals, although the station working sometimes makes it necessary to do so—as the drivers are fully aware. Driver Copland and the driver of the light engine both informed me that on previous occasions they had always received some warning from the station staff, or signalmen, if there was any obstruction immediately ahead of the outer home signal, but there appears to be no rule or instruction to this effect.

It is essential to safe working that signals should be placed where they can be clearly seen from the foot-plate, and from a reasonable distance. To find a thoroughly suitable position for the outer home, or intermediate, signal of No. 9 platform seems to be practically impossible, *i.e.*, one which would afford a good view without interfering unduly with traffic arrangements, and I understand that until the accident under consideration took place the present signalling has proved to be in every way satisfactory. The fact of an accident having occurred must, however, necessarily lead one to view matters from a new standpoint, and the primary object of a Board of Trade enquiry being held is to determine whether alterations or additions are desirable to give further protection against a similar occurrence ? I am of opinion that something might, and should, be done to let the driver know the position of affairs before he enters the station. In somewhat similar circumstances, at Victoria station, Manchester, a "calling-on" arm is used to admit a train when the platform is occupied outside the signal corresponding to the inner home signal of No. 9 platform at Newcastle. I recommend the North-Eastern Company to carefully consider whether this plan could not be adopted with advantage, so as to give, at No. 3 cabin, separate and distinct indications of No. 9 line being clear up to the inner, or only to the outer, platform signal respectively.

I have, &c.,
G. W. ADDISON,
*Lieut.-Col. R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

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**Printed copies of the above Report were sent to the Company on the 23rd August.**

## NORTH-EASTERN RAILWAY.

Board of Trade (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.,
September 18th, 1897.

SIR,

I HAVE the honour to report for the information of the Board of Trade, in compliance with the Order of the 3rd August, the result of my enquiry into the collision that occurred on the 31st July at Newcastle-upon-Tyne on the North-Eastern Railway.

In this case the 12.20 p.m. express train from Edinburgh to London entered the station against the signals, and came into collision with an empty train which was standing at the east end of No. 9 platform.

Three passengers sustained slight injuries. The fireman, who was thrown off the footplate on to the ballast by the shock, was badly hurt; while two of the servants of the Company, who were in the front van of the empty train, were also injured.

The passenger train consisted of a four-wheels-coupled engine, six-wheeled tender, and eight bogie carriages, including two brake composites, and it was fitted throughout with the Westinghouse continuous brake, besides the usual hand brakes.

The empty train comprised a tank engine (which had just been uncoupled) and ten vehicles, including two vans, and in front of this train there were six other empty coaches standing upon the same line. The effect of the collision was to drive the empty train forward several yards, causing it in turn to collide with the carriages in front of it, and to force them forward. Five vehicles were derailed, including the two leading bogie coaches of the express, and the rear van of each of the two empty trains, while the damage to rolling stock was extensive. The express engine was much injured, and the tank engine slightly so. The rear van of the first empty train was smashed up, and all the other empty carriages, with one exception, were more or less damaged. For full particulars, *see* Appendix.

### *Description.*

Platform lines Nos. 9 and 10 are two of the through lines of the Central station at Newcastle-upon-Tyne, and they are separated from each other by an island platform, No. 10 line being on the south and No. 9 on the north of the platform. They are both of sufficient length to hold two ordinary trains.

Entrance to these platforms from the east is governed from three signal boxes, Nos. 1, 2, and 4, of which No. 1 is the main box, situated just outside the east end of the station, the others being under the station roof; but it devolves upon No. 4 to settle to which of the two platforms a train is to run. In this case it was intended, as usual, that the train should arrive at No. 10 platform, but as the signalman in No. 4 was not quite ready for it, and had not given to No. 1 the necessary indication that a platform was available for the train, the latter rightly kept all his signals at danger, and did not "accept" the train from Dean Street.

The block sections outside the station are very short, the following being the distances between the signal boxes referred to in the evidence :—

| | |
|---|---|
| From No. 2 box to No. 1 box ... ... ... | 263 yards. |
| „ No. 1 „ „ Dean Street box ... ... | 200 „ |
| „ Dean Street box to Manors Junction ... | 223 „ |

The first signal which driver Gardner found at danger was the distant signal of Dean Street box, which is attached to the post of the home signal of Manors Junction and is 118 yards outside of Manors signal box, or 804 yards from No. 2 signal box. The other signals which were at danger when the train passed them were, the home signal of Dean Street, the distant and home signal of No. 1 box, and the outer and inner home of No. 2 box.

From Manors Junction to the entrance of the Central station the gradient is rising, the rates of inclination being 1 in 149, 1 in 190, and 1 in 548.

Absolute block working ceases at Manors Junction, from which place into the Central station permissive working is in force, the necessary authority for this having been granted by the Board of Trade.

The North-Eastern Railway Company, on whose system the Westinghouse brake is in use, have laid down a definite rule that trains, when entering terminal stations, are to be stopped by means of the hand brake, the continuous brake being held in reserve for use in an emergency. The rules further provide that the driver of a train is responsible that the brake connection is properly made between the engine and tender, and that the cocks on the air pipe are open, and that the guard in charge should invariably test the brake by opening the air valve in his van and reducing the pressure five to eight lbs. whenever a fresh engine is attached to a train.

## *Evidence.*

*Peter Gardner*, driver, states: I have been in the Company's service over 30 years, and I have been driver all the time. On the 31st July I came on duty at 3.20 a.m. to work till about 3.20 p.m. I was standing from 6.40 a.m. till 1.53 at Berwick. At 1.53 p.m. I coupled on to the corridor express, which leaves Edinburgh at 12.20. This is due to leave Berwick at 1.30 p.m., but it was running late on that day. My engine was No. 1869, four wheels coupled, passenger engine, with leading bogie, and six-wheeled tender. It was fitted with the Westinghouse brake working blocks on the four coupled wheels of the engine and on all the wheels of the tender. There was also a hand brake on the tender. The train is not timed to stop anywhere between Berwick and Newcastle. The train consisted of eight six-wheeled bogie carriages. The brake was connected throughout the train. The pipe between the tender and the front of the train was connected. The brake was not tested before we left Berwick. The rule is that the brake should be tested before starting. I had to use the brake at Scremerston slightly for the purpose of checking the speed of the train, the distant signals being against my train. By the time I reached the home signal at this place it was off, so that I had not to stop there. So far as I knew the brake was acting properly at Scremerston. At any rate I was able to reduce the speed of my train by it. On approaching Argyle Street signal box the signals were at all right. At Manors station also the signals were at all right. The signals of Dean Street signal box were at danger. The distant signal of this place is on the same post as the home signal of Manors station. All the signals of No. 1 signal box, Newcastle central, were at danger. I had shut off steam at Benton bank, about 3 miles from Newcastle. This is the usual place for shutting off steam, on account of the gradient, which falls nearly all the way to Newcastle. I did not apply steam again after this. I was running at the time between 40 and 50 miles an hour. I did not use my brake at all on the bank. On passing Ouseburn signal box I applied my brake to steady the train. This is the usual place for doing so. I found the brake did not work as I expected. I then applied my brake full force and exhausted all the air from the train pipe, my train pipe gauge showing zero. This had not the desired effect in checking the train. I then discovered that there was something wrong. I was then near Argyle Street cabin. As soon as I came in sight of the distant signal of Dean Street signal box, I reversed my engine and gave her steam. This had further effect in reducing the speed. I think I passed Dean Street signal box at about 20 miles an hour, and this would also be about the speed in passing No. 1 signal box. I could do nothing more to stop my train. As I was entering the station I saw the empty train standing in front of me on No. 9 platform line. My fireman either jumped or fell off into the six-foot way. I stuck to my engine, and we struck the empty train at a speed of from 10 to 15 miles an hour. I was shaken but not seriously hurt. My engine was a good deal damaged. It remained on the rails. About five minutes after the accident I went to see what was wrong with the brake. The brake inspector then drew my attention to the cock in the train pipe being shut on the first carriage of the train. It is the custom when uncoupling an engine to close the cock on the front of a train, in order to save air. The rule says that the driver is responsible for seeing that the connections are properly made between the engine and train and the cocks on the main pipe being open. It is usual for the fireman to perform this duty. I did not know on leaving Berwick that the cock had not been opened. I asked the fireman when we started if he was right, and he replied "Yes." It is not possible to see the cock on the main pipe of the new corridor carriages, as it is fixed below the frame. It is necessary to get on to the ballast to see it. I think that the cause of the failure of the brake to act was due to the cock on the main pipe being closed.

*Begby Walton*, fireman: I have been in the Company's service about 10 years, and I have been 7½ years fireman. On 31st July I came on duty at the same time as driver Gardner. At 1.53 p.m. we backed on to the corridor express from Edinburgh at Berwick. I made the connection between the engine and train. I connected the brake-pipe and I opened both cocks on the pipe. One of the cocks is fixed under the car. It can only be seen by stooping down. I cannot say whether the brake was tested before starting or not. I agree with what my driver says happened up to the time of the collision. I was standing on the full plate between engine and tender, and was thrown off the engine by the collision, and remember nothing more. It is the custom for the fireman to make the connection between engine and tender. I feel sure I made the connections properly and opened the cocks on the main pipe. My driver said nothing to me when he found that the brake was not acting properly. When my engine backed on to the train at Berwick the brakes were slightly on. I heard the fireman of the North British Company let air out of the pipe to enable his engine to be uncoupled. If he had not done this, I should have had to let some air out of the pipe in order to couple my engine on. If the cocks between the engine and carriage had not been opened, it would not have been possible to have started the train. We have to reduce speed running round the curve at Morpeth. The driver did not use brake at this place. But he shut off steam at Pegswood bank, as is the custom. The air pump was working all the time from Berwick to Newcastle.

*John Smith*, conductor: I have been 34 years in the railway service. I have been conductor on the East Coast joint lines for about eight years. On the 31st July I came on duty at Edinburgh at 11.30 a.m. to act as conductor in charge of the 12.20 corridor express from Edinburgh to London. The train was 27 minutes late in starting. At Berwick the train has to change engines. We arrived at Berwick at 1.50, and we left at 1.54, being 24 minutes late. My train consisted of eight bogie carriages, seven having six-wheeled bogies, and one having four-wheeled bogies. When the North-Eastern railway engine was coupled on to the train at Berwick I did not test the brake. The rule is that the guard should test the brake. I was riding in the rear carriage which was a third-class brake carriage. The train was marshalled as follows: third-class brake carriage in front, composite, third-class dining saloon, first-class dining saloon, three composites, and third-class brake carriage. The train went away from Berwick all right. The brakes were then off. The gauge in my van showed about 60 lbs. when we started. I did not notice any application of the brake at Scremerston or at any other place between Berwick and Newcastle. On approaching Dean street I saw the signals were at danger. The speed was reduced before we reached Manors station. I think we were then going at about 14 miles an hour when I saw that the train passed the Dean street signals at danger. I was surprised and I looked out of the window and could see nothing in front of my train. I was surprised that the Westinghouse brake was not applied. I did not apply the air-brake myself because there was not sufficient pressure showing on the gauge in my van. The gauge showed below 25 lbs. I therefore applied my hand-brake as hard as I could. I heard the driver give a long whistle on passing the Manors. This is the usual place for the whistle to be sounded. After applying my brake I could do nothing more. The shock of the collision was not very serious in my van. I did not know that we had struck anything. I got out and walked up the platform and then I saw what had happened. I believe some of the wheels of the two front coaches of my train were off the rails. But the train was not much damaged. I believe one or two passengers complained, but not to me. I asked an inspector on the platform why we had run into No. 9 instead of No. 10. He said he did not know. I did not speak to the driver at all. I did not make any enquiries at the time as to the reason why the train had run against signals. I did not find out anything about the brake. My time was fully occupied in arranging for getting my train away again. We left two damaged carriages behind and attached a van in rear, and went away with six vehicles to London. We left Newcastle with this van at the rear at about 46 minutes late. We were delayed 22 minutes at Newcastle. I cannot say what was the cause of the accident. When we started away from Newcastle the brake was tested from the rear of the train and it was then working all right. My time at Berwick was occupied in the following way:—It was found as we were leaving Edinburgh that a drunken man had got into the train by mistake. At Berwick the man was asleep in the compartment and it took me some time to get him out of the train. I left him at Berwick. By the time I had done this the train was ready to start. I got the signal from the inspector and passed it on to the front guard. And in this way I omitted to test the brake.

*Thomas Ford*, passenger guard: I have been in the North-Eastern Railway Company's service about 24 years, and I have been guard about 19 years. On 31st July I came on duty at Berwick at 1.30 to act as second guard of the 12.20 corridor train from Edinburgh to London. The train arrived at Berwick at 1.50 and left at 1.54. The North British engine was detached and the North-Eastern Railway engine attached. I did not see the connection made between the engine and train at Berwick. I cannot say whether the fireman of the North British engine let any air out of the train pipe when he uncoupled his engine. I do not know if the brake was tested before the train left Berwick. I was in the front brake compartment, and it was not my duty to test the brake. I did not see the drunken man being got out of the train. All the signals were right for the train as far as Dean Street, with the exception of the distant signal at Scremerston. The driver shut off steam there and re-applied it on seeing that the home signal was off. I can't say where he shut off steam again, but he reduced speed on Benton bank. I did not notice the brake pressure on the gauge in my van when leaving Berwick. I did not notice it at any time during the journey till we got to Dean Street. The pressure gauge then showed zero. I saw that the signals were at danger at Dean Street and I applied my hand brake. It was no use my applying the Westinghouse brake as the pressure was exhausted. I was surprised at the train going past the signals at danger. The driver gave several long whistles between Manors and Dean Street. I thought then that he was going too fast, and then it was that I looked at my gauge. I noticed that we ran into the station against the signals, and I put my brake hard on. I did not see the train in front till we had struck it. I was not hurt by the collision. My carriage was thrown off the road. It and the next coach to it were left behind when the rest of the train went on to London. I got out on to the platform and looked after the passengers. I did not speak to the driver. I did not speak to anyone as to the cause of the accident. I did not know why the driver ran past the signals at danger, and I did not know why we went into No. 9 platform. After the accident my train was shunted from No. 9 to No. 10 platform and backed on to another van. We went away to York with six of the injured vehicles and a six-wheeled van. We were delayed about 23 minutes altogether. I tested the brake before we left Newcastle for York, and it was then all right. I did not see any one release the brakes by hand at Berwick, nor did I hear any sound of air escaping. My carriage when the collision occurred did not appear to mount the tender at all. After the collision my train continued moving down the platform two or three carriage lengths, pushing the empty vehicles in front of it.

*John O'Donnell*, brake examiner: I am brake examiner on the North-Eastern Railway, stationed at Newcastle. On 31st July I was on duty at the west end of Newcastle Central station when the corridor train arrived. I was not near the train when it came in, but hearing a commotion I ran round, and I found the train in No. 9 platform. I saw them commencing to uncouple the two front carriages from the rest of the train. I thought it time to look after the condition of the brake. I at once drew the attention of P. Redican, who had been waiting for the train on No. 10 platform, to the necessity for examining the brake. When we got down to the engine we found that the engine tap was open, and the connection all right. But the tap underneath the van was closed. We both saw this. I drew the driver's attention to it. He said it was a bad job. But he said he had made three applications of the brake on his journey. I also noticed the handle of the tap on the heating pipe, and that was closed. About 10 minutes after examining the taps on the pipe I looked at the gauge in the front van of the train and it was then registering 10 lbs. pressure.

*P. Redican*, brake examiner: I am stationed at Newcastle. On the 31st July I was standing between Nos. 4 and 5 sidings, at the back of No. 10 platform, waiting for the corridor train. I heard the crash of the collision and I went round to No. 9 platform. I went to see what had happened, and I then examined the brake gear. I was joined by O'Donnell. He asked me if I had seen the cocks between the engine and van. I said "No." We both went and looked at them, and he drew my attention to the cock on the front carriage being shut. We drew the driver's attention to it. He said he had pulled his train up at Scremerston and Lucker, and that the cock must have been shut by the collision. After the train had been shunted into No. 10 platform, I examined the other six carriages, and the brake was all right. I tested the brake myself, and it was working properly. I did not examine the gauges in the guard's van.

*Robert Hedefine*, signalman, states: I have been stationed in No. 4 box, Newcastle Central station, for about two years. On the 31st July I came on duty at 2 p.m. to work till 10 p.m. At about 3.16 p.m. I was expecting the corridor express, and I intended to put it into No. 10 platform. At about this time I had an engine from No. 1 signal box to go into the sidings at the back of No. 10 platform. As soon as the engine had passed into the siding, I replaced No. 72 points to their normal position. About a quarter to half a minute from the time the engine got into the sidings, I saw the express coming into the station. I think the train was travelling at about 30 miles an hour when I first saw it. It was passing under the signal bridge. The speed was very much faster than usual. I think when the collision occurred the speed was about 14 miles an hour. A few minutes before this I had permitted a train from Tynemouth to come into No. 9 platform, and it was still standing at the platform when the express arrived. My signal box is not a block box, but I have to control the working of traffic in and out of Nos. 8, 9, and 10 platforms.

*John Wharton*, relief signalman: I was on duty in No. 1 signal box, Newcastle Central station, on the 31st July. At about 3.11 I got the first ring for the express from Dean Street; about two minutes afterwards I got the second ring, shewing it was passing Heaton South Junction. As I got no indication from No. 4 that a platform was ready for the train, I therefore kept my signals at danger. Absolute block working ceases at Manors station. From this point in to Central station permissive block is in force. At about 3.15 I was surprised to see the train approaching. I think it was coming at 20 to 25 miles an hour. It would then be passing Dean Street cabin. It was coming faster than usual. The points were lying for No. 9 platform, having been set for a previous train to run into it. The driver was whistling continuously from passing Dean Street till he arrived in No. 9 platform. The speed was being reduced as the train passed my box. I think the speed at the time of the collision was about 15 miles an hour. The wheels of the carriages of the train were running freely as they passed the signal box. The rear guard was standing at the window looking out as he passed.

## *Conclusion.*

The train to which this very serious accident happened left Edinburgh at 12.47 p.m., being 27 minutes late. It reached Berwick at 1.50, where it had to stop for the purpose of changing engines, the North British engine being detached and a North-Eastern engine attached at that place. It left Berwick at 1.54, being then 24 minutes late. The duty of coupling and uncoupling engines is usually performed by the fireman, but the driver is responsible for seeing that the connections are properly made. It is the rule adopted by all railway companies, that whenever an engine is attached to a passenger train, the continuous brake shall be tested by the head guard before the train starts, the test being made, in the case of the Westinghouse brake, by opening the valve in the guard's van, and reducing the air pressure in the air pipe by 5 to 8 lbs., whereby it can at once be ascertained whether the brake connections are properly made, and the brake acting throughout the train. In the case under consideration this ought to have been done at Berwick by conductor John Smith, but although there was ample time for the purpose this man acknowledges that he did not perform this very important duty at that place.

All went right with the train till the driver came in sight of the signals of Dean Street signal box, which were at danger. Driver Gardner says that he had shut off steam as usual on Benton bank, about three miles from Newcastle, the speed being then between 40 and 50 miles an hour, and did not apply it again. At Ouseburn signal box he applied the air brake to steady the train, but, although he exhausted all the air in the pipe, the brake did not have the effect as expected. By the time he reached Argyle Street and obtained a view of the distant signal of Dean Street signal box, he realized that something was wrong, whereupon he reversed his engine and applied steam, but though he says he reduced the speed by these means, he was unable to stop. The train therefore ran past the distant and home signals of Dean Street cabin, the distant and home signals of No. 1 cabin and the outer and inner signals of No. 2 cabin, all of which were at danger, and entering No. 9 platform line in the Central station (this being the line for which the points normally lie) came into violent collision with the train already there, from which, by great good fortune, the passengers had just alighted. Driver Gardner stuck to his engine and escaped unhurt, but fireman Walton was thrown off the footplate and was picked up in an unconscious condition. From the evidence of the signalman the speed of the train at the time of the collision was from 14 to 15 miles an hour, and judging from the results, this appears to me by no means an exaggerated estimate.

At first no one seems to have had any clear idea of the cause of the accident, and the attention of the conductor, guard, and station staff, was directed to looking after the passengers, and to the arrangements for enabling the train to proceed on its journey southwards. But about five minutes after the accident, brake inspectors O'Donnell and Redican made an examination of the brake gear of the train, and found the cock of the brake pipe on the carriage nearest to the engine closed, and as this would render the brake inoperative on the whole train, with the exception of the engine and tender, it appeared sufficient to account for the failure of the brake to act, and for the results that followed. Although, as already stated, it is usual for the fireman to make the connections between the engine and train, the responsibility for the correct performance of this duty necessarily rests upon the driver. Assuming therefore that the cock was closed when the train left Berwick, it indicates that fireman Walton did his work in a careless fashion, but the fault is that of driver Gardner, and the principal blame must rest on him. But as an additional precaution, and for the special purpose of guarding against such an omission, the rule exists that the head guard should test the brake before starting in the manner already described. Had conductor John Smith done his duty in this respect before leaving Berwick, the omission to open the cock in the air pipe would have been discovered, and the accident would probably have been averted. It would seem that Smith was guilty of a serious dereliction of duty in omitting this necessary precaution, and there is no excuse whatever for his neglect. The train remained at Berwick four minutes, and as Smith had no platform work to attend to (the stop at this place being made solely for locomotive purposes) he had ample time to test the brake. Conductor Smith must therefore share the blame for the disaster with the driver. These men had been on duty, driver Gardner for 11½ hours, and conductor Smith 3¾ hours, at the time of the occurrence.

In the above remarks I have accepted the suggestion that the cock in the air pipe was closed when the train left Berwick, but I am by no means convinced of the truth of that explanation. There is no doubt that the cock was found closed by brake inspectors O'Donnell and Redican; but in justice to fireman Walton, who was lying unconscious at the time that these men examined the brake apparatus, it must be remembered that this discovery was not made till at least five minutes after the accident, during which interval driver Gardner was alone upon his engine, and had therefore ample time and opportunity of closing the cock himself, with the object of shifting some, if not all, of the blame from his own shoulders on to that of his fireman. Walton assured me that he had made the connections properly at Berwick, and as he is a man of experience, and a passed driver, it is probable that he did so. Moreover, all the incidents of the journey, the starting of the train without difficulty from Berwick after the change of engines, the checking of the speed by means of the brake at Scremerston and elsewhere, the fluctuation of the air gauges in the guards' vans, and the somewhat inconsistent remarks made by the driver to the brake inspectors when they drew his attention to the position of the tap, seem to me to favour the view that the brake was in proper order, and the cock opened when the train left Berwick. If this were so, the most probable explanation of the accident would seem to be that driver Gardner did not expect that his train, which was an important express, would be stopped outside Newcastle, that he therefore approached the place at an undue rate of speed, and was therefore not able to pull up at the Dean Street signals when he found them at danger.

Although, in the interests of the fireman, I have drawn attention to this alternative hypothesis, there is no necessity for me to go further into the arguments for and against it, as in any case the responsibility for the accident must rest upon the driver and conductor.

I have, &c.,
H. A. YORKE,
*Lieut.-Col., R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

## APPENDIX.

### Particulars of Damage to Rolling Stock.

*Engine* 1,869.

Chimney broken off; smoke-box door bent; hand rail, front and right side bent; front fall-plate broken; drag hook bent; lamp stands bent; buffer plate on right side bent; vacuum and Westinghouse front pipe broken; bogie frame slightly bent at front end; right leading bogie axle-box broken; horn plate broken; vacuum pipe on boiler side slightly bent; cleaning plates, Nos. 1 and 2, holed; left window glass broken; ploughs bent; left leading buffer studs broken and buffer damaged.

*Carriages.*

North-Eastern third, 1,137.—Three footboards, two nozzles, one ducket glass, and one quarter light, &c., broken; three buffer rods, &c., bent.

North-Eastern brake third, 543.—Two buffer rods bent; panels displaced, &c.

North-Eastern third, 1,403.—Two coupling shackles and four buffer rods bent.

North-Eastern third, 596.—One buffer rod bent; three nozzles and end footboard damaged.

North-Eastern third, 737.—One buffer rod bent and two nozzles damaged.

North-Eastern compo, 248.—One drawbar hook broken; one buffer rod bent, &c.

North-Eastern third, 506.—One side chain hook broken and two nozzles damaged.

North-Eastern third, 546.—One buffer rod bent and three nozzles damaged.

North-Eastern compo, 943.—Three buffer rods bent; three nozzles damaged and one door light broken.

North-Eastern third, 1,566.—Four buffer rods bent; one quarter light broken.

North-Eastern third, 1,696.—One buffer rod bent; one body end bracket and two door lights broken.

North-Eastern third, 3,114.—Two buffer rods bent; one end sheath; two nozzles; two footboards; one sole end; one buffer rod and one diagonal broken; roof damaged.

North-Eastern van, 341.—One buffer rod bent; three panels and one nozzle broken.

North-Eastern third, 1,218.—One end sheath; three nozzle blocks: two nozzles; one drawbar; one diagonal; one end body frame; end panels and rails, &c. &c., broken.

North-Eastern van, 250.—Demolished.

North-Eastern third, 3,159.—Two end panels; two quarter lights and two nozzles broken.

North-Eastern third, 3,071.—Two metal nozzles; three footboards; one end sheath; four doors; side corner frame and panels, &c., broken; one end smashed.

North-Eastern compo, 854.—Three buffer rods; one drawbar and shackle bent; one end sheath; two door glasses; one nozzle; one door; side panels, &c., broken; one end smashed.

*All swan necks of vacuum and Westinghouse pipes on the above vehicles broken.*

East Coast, third, 262.—Five elliptical springs displaced.

East Coast, compo, 245.—Four elliptical springs displaced.

Printed copies of the above Report were sent to the Company on the 8th October.

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## NORTH-EASTERN RAILWAY.

Board of Trade (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.,
February 5th, 1898.

Sir,

I have the honour to report for the information of the Board of Trade, in compliance with the order of the 19th ult., the result of my enquiry into the causes of the collision that occurred on the 27th December, 1897, at Ryhope, on the North-Eastern Railway.

In this case, while the 2.10 p.m. goods train from West Hartlepool to Newcastle was running down Seaton Bank the driver lost control over it, and it came into collision with the rear portion of another goods train, which had been left standing on the main line at Ryhope Colliery Junction, whilst its engine was performing shunting operations in the goods yard.

The driver and fireman of the 2.10 train were shaken and bruised somewhat, and the guard, who jumped off just as the collision occurred, received injuries to his face and hands.

The 2.10 train consisted of a six-wheels-coupled, tender, engine, fitted with the Westinghouse brake, working blocks on all the wheels of the engine and tender (12); 27 waggons and a brake van. Of the waggons, 20 next to the engine were loaded with pig iron, two were loaded with ordinary goods, and five were empty. The train run into consisted, at the time, of 11 waggons and a brake van; three of the waggons of this train became detached, and were driven forward about three-quarters of a mile, on the falling gradient, by the shock of the collision.

The engine of the 2.10 train and several waggons of both trains were thrown off the line, and it is reported that one brake van and two waggons were completely destroyed, while seven others were very much damaged.

Full details of the damage to rolling-stock are given in an appendix.

### *Description.*

Seaton Bank, where this collision occurred, is between Hartlepool and Sunderland. Bank Head signal cabin is, as its name implies, at the top of the bank, and from here to Ryhope Colliery Junction cabin, 2¾ miles, the gradients are as follows (all falling) :—

1 in 88 for 190 yards.
1 in 39 for 310 yards.
1 in 44 for 1 mile 300 yards.
1 in 48 for 530 yards.
1 in 60 for 1,210 yards.
1 in 71 for 55 yards.
1 in 114 for 340 yards.

The collision occurred just at the foot of the gradient of 1 in 114, 174 yards from Ryhope Colliery Junction cabin, from which point the line then falls on a gradient of 1 in 238 for a considerable distance.

There are two stations on the bank, viz., Seaton station, on the gradient of 1 in 44, about half-a-mile below Bank Head, and Ryhope station, about 2½ miles below Bank Head, on the gradient of 1 in 114. From Ryhope station to Ryhope Colliery Junction the down line is on a curve to the left of 20 chains radius. Seaton station signal cabin is at the upper, and Ryhope station cabin at the lower, end of their respective stations.

There is a goods yard at Ryhope, on the up side of the railway, and down trains, *i.e.*, trains proceeding from Hartlepool to Sunderland and Newcastle, enter the yard at Ryhope Colliery Junction cabin. Between the latter cabin and the station there are two parallel siding lines, and it appears to be customary to place down trains on No. 1 siding, clear of the main line, while any shunting operations are going on, but that this could not be done on the occasion under consideration.

The following particulars of the runaway train may be of interest :—

| — | Weight. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Tare. | | | Net. | | | Gross. | | |
| | Tons | cwts. | qrs. | Tons | cwts. | qrs. | Tons | cwts. | qrs. |
| Goods Waggon ... ... | 5 | 12 | 2 | 5 | 0 | 0 | 10 | 12 | 2 |
| „ „ ... ... | 5 | 6 | 0 | 5 | 0 | 0 | 10 | 6 | 0 |
| „ „ ... ... | 5 | 15 | 0 | 5 | 8 | 0 | 11 | 3 | 0 |
| „ „ ... | 4 | 11 | 0 | 7 | 15 | 0 | 12 | 6 | 0 |
| „ „ ... ... | 5 | 13 | 0 | 7 | 8 | 0 | 13 | 1 | 0 |
| „ „ ... ... | 5 | 13 | 0 | 7 | 16 | 0 | 13 | 9 | 0 |
| „ „ ... ... | 5 | 16 | 0 | 6 | 4 | 0 | 12 | 0 | 0 |
| „ „ ... ... | 5 | 12 | 0 | 8 | 0 | 0 | 13 | 12 | 0 |
| „ „ ... ... | 4 | 16 | 2 | 7 | 8 | 0 | 12 | 4 | 2 |
| „ „ ... ... | 5 | 13 | 0 | 7 | 3 | 0 | 12 | 16 | 0 |
| „ „ ... ... | 5 | 5 | 0 | 8 | 1 | 0 | 13 | 6 | 0 |
| „ „ ... ... | 5 | 6 | 0 | 6 | 10 | 0 | 11 | 16 | 0 |
| „ „ ... ... | 4 | 15 | 0 | 8 | 3 | 0 | 12 | 18 | 0 |
| „ „ ... ... | 5 | 14 | 0 | 8 | 3 | 0 | 13 | 17 | 0 |
| „ „ ... ... | 5 | 6 | 0 | 7 | 9 | 0 | 12 | 15 | 0 |
| „ „ ... ... | 5 | 3 | 0 | 7 | 15 | 0 | 12 | 18 | 0 |
| „ „ ... ... | 5 | 11 | 0 | 5 | 12 | 0 | 11 | 3 | 0 |
| „ „ ... ... | 5 | 12 | 0 | 7 | 12 | 0 | 13 | 4 | 0 |
| „ „ ... ... | 4 | 19 | 0 | 7 | 3 | 0 | 12 | 2 | 0 |
| „ „ ... ... | 4 | 10 | 0 | 7 | 17 | 0 | 12 | 7 | 0 |
| „ „ ... ... | 5 | 14 | 0 | 8 | 5 | 0 | 13 | 19 | 0 |
| „ „ ... ... | 5 | 4 | 0 | 8 | 0 | 0 | 13 | 4 | 0 |
| Cattle „ ... ... | 6 | 11 | 0 | Nil. | | | 6 | 11 | 0 |
| „ „ ... ... | 5 | 4 | 3 | „ | | | 5 | 4 | 3 |
| „ „ ... ... | 6 | 3 | 0 | „ | | | 6 | 3 | 0 |
| „ „ ... ... | 6 | 4 | 0 | „ | | | 6 | 4 | 0 |
| Fish „ ... ... | 5 | 17 | 0 | „ | | | 5 | 17 | 0 |
| Brake van ... ... | 10 | 13 | 0 | „ | | | 10 | 13 | 0 |

The total weight of the train behind the engine was thus about 315½ tons, the maximum load allowed on Seaton Bank by the Company's regulations being 320 tons.

The whole of the waggons, with one exception, had "pin" brakes applying to two wheels on each waggon ; the van was fitted with brakes applying to all its wheels (4).

The weight of the engine, when fully loaded, was 36 tons 8 cwt., and of the tender 23 tons 11 cwt.—total, 60 tons nearly.

## *Evidence.*

*Robert Chapman* states : I have been nine years in the Company's service, six years a signalman ; at Ryhope 4½ years. On December 27th I came on duty at 2 p.m., in Ryhope station cabin, to work until 11 p.m., when the cabin is usually closed ; but in consequence of the accident I had to remain on duty until 2 a.m. on the 28th. At 5.9 p.m. a goods train from Hartlepool passed my cabin on the down line. At the same time, I was offered another down Hartlepool goods train—from Seaton station cabin—which I accepted at once, but I did not lower any signals. The second train passed at 5.20, my signals being still at danger, as I had not got "Train out of section" from the Colliery Junction cabin for the preceding train. As the second train approached, and was still some distance away, I heard the driver whistling, to intimate that his train was running away ; I should say the speed on passing the cabin would be about 20 to 25 miles an hour. According to my train register book I intimated to the cabin ahead, by bell signal, 4 pause 5 pause 5, that the train was running away on the right line ; the signalman did not acknowledge it. The signalman at the Colliery Junction called me up, however, on the telephone, to ask what was the matter, and I told him the train was running away. I do not recollect any previous case of a train running away down the bank during the time I have been at Ryhope.

*William Henry Robson* states : I have been 25½ years in the Company's service, all the time a signalman, and employed for 20 years at Ryhope Colliery Junction. On the 27th December I came on duty at 2 p.m., to work until 12 midnight. A goods train from Hartlepool (engine No. 860) came to a stand at the down home-signal of my cabin at 5.10 p.m. There was a mineral train at the time in No 1 siding (or independent line), so that the goods could not be put there, as it ordinarily would be while shunting operations are going on. I do not like to leave anything standing on the down line, and it would probably not be necessary to leave anything there more than three or four times in six months. On this occasion the engine went into No. 2 siding with one waggon, and it had not returned to its train before the accident occurred. At about 17 or 18 minutes past 5 I heard an engine coming down the bank whistling, and I thought something was wrong. At about the same time the station signalman called me up on the bells and on the telephone, but it was no use. I could do nothing, as the engine was not on the train at my cabin. I tried to attract the driver's attention, by raising and lowering the siding signal—*i.e.*, the signal for coming out of the siding. About three years ago a mineral train ran away, but it was brought to a stand at my advance signal without doing any damage.

*Thomas Handisides* states : I have been 30 years in the Company's service, 22 or 23 years a driver. On December 27th I came on duty at 1.10 p.m., to work until about 1 a.m. My engine, No. 232, is a six-wheels-coupled, tender, engine fitted with the Westinghouse brake, working blocks on all wheels of the engine and tender. On the above date I left Hartlepool at 2.10 p.m. and I arrived at Seaton Bank Head cabin about 5 p.m., where I brought the train to a dead stand for the brakes to be put down. I had 20 loaded metal waggons, two loaded goods, one empty fish, four empty cattle waggons, and a brake van ; I am not quite sure what the limit of load is, but this was a heavy train. When the guard had put the required number of brakes down he gave a green, hand-lamp, signal to me to go away. I had to give the engine steam to start the train, and I probably closed the regulator when about half the train was on the incline. By the time I got to the down advance signal at Seaton station—say 1,000 or 1,200 yards from the Bank Head—I found the train was overmastering me ; up to that time the train was being worked with the tender hand-brake on, but I then applied the Westinghouse brakes. I was running engine in front, and it is fitted with sand pipes on both sides. It was raining a little—perhaps chiefly haze off the water—when we got to the Bank Head. Although the rails were sanded, and I reversed the engine—without the wheels skidding—we continued to gain speed, and when I realized I could not stop I opened the whistle. I passed through Ryhope station at a speed of about 20 miles an hour, as near as I can tell, all signals there being at danger. When we got round the corner, below Ryhope station, I could see the van of a train standing at the Colliery Junction. Before the collision occurred I think our speed had been reduced somewhat. I was thrown up against the brake handle and I was shaken a good deal, but not actually injured. I have been in the habit of running down the incline with passenger, goods, and mineral trains for some years past, and I have had no previous difficulty in handling the trains. The only explanation I can offer in this case is that the waggons were not sufficiently braked. I felt no unusual bumps on the engine on starting away from the top of the bank.

*Thomas Wood Smith* states : I have been ten years in the Company's service, seven years a fireman. I have been firing for driver Handisides about four months, and I have frequently ridden down Seaton Bank on all classes of trains. My hours of duty on December 27th were the same as my driver's. After leaving Bank Head I put the hand brake slightly on at once, and then I put it hard on as soon as the waggons began to close up. I should say the driver applied the Westinghouse just upon reaching Seaton station. The latter brakes were applied very soon after I had put the hand brake hard on. I opened the sand on my side and my mate opened it on his side—there are two separate handles. I was knocked up against my mate when the collision occurred, and I was hurt a little on the elbow and on the side of my face. I have not been off duty since the accident. We had certainly reduced speed somewhat before the collision—we seemed to pull up somewhat on the curve at the station. The engine was put in reverse gear before we got to Ryhope station. The wheels did not skid. In my experience the Westinghouse brake is always kept in reserve on the bank, and the train is worked on the hand brake.

*George Fox* states : I have been 27 years in the Company's service, and a goods-guard ten years. On December 27th I came on duty at 1.40 p.m., to work until about 1 a.m. on the 28th, but we are generally late. I left West Hartlepool at 2.10 p.m. to run to Newcastle Forth station. On arrival at Seaton Bank Head I had 22 loaded and 5 empty waggons behind the engine—a load of about 305 tons gross. Twenty of the waggons, next to the engine, were loaded with pig-iron, and the other two were loaded with goods. Most of the vehicles were timber waggons, and the remainder goods waggons. When the train came to a stand at the Bank Head I got out of my van on the off side to put down brakes. I put the brakes down on two empty cattle waggons near the van—they were double brakes, and I pinned them down. I put three others down on the same side of the train and two more on the other side ; the leading waggon which I braked would be about the middle of the train. They were all double brakes and were all pinned down, five on loaded and two on empty waggons. I have frequently come down the bank with heavier loads without difficulty. It was a nice day, but it was hazy—with a strong wind blowing from the sea—as we came down Seaton bank. My brake was " on " while we were standing at the Bank Head, but not very hard, and I did not release it when we moved away. After passing Seaton station I put it hard on, and I went to the van door and looked out ; we were then going too fast and I found the van wheels skidding. I released my brake and then put it on again just hard enough not to skid the wheels. I could see fire flying from the braked wheels of the waggons. We seemed to gain speed all the time. My van was within three waggon lengths of Seaton Bank Head cabin while we were standing there. The driver began whistling soon after we passed the advance signal at Seaton station. Coming through Ryhope station platform I got on to the step of my van and I jumped off when I heard the engine strike the train in front of us. I was cut on the face and hands. The four waggons next to the engine dropped off the rails, but I do not think they were damaged. I had used the brake stick to put the brakes down with. I examined my waggons about three-quarters of an hour after the accident. I felt rather dazed immediately after the accident. I found two of the brakes I had put down had been released—one on a loaded and one on an empty waggon. The other five were all right. I think the wind probably blew the sand off the rails—it is very exposed on the bank just after leaving Seaton station.

*George Henry Sampson* states : I have been 23 years in the Company's service, and a goods guard five years. On December 27th I came on duty at 1.15 p.m. to work until 1.40 a.m. on the 28th. I left West Hartlepool at 1.45. to run to Sunderland. On arrival at Ryhope Colliery Junction, I had seven loaded and five empty waggons behind the engine—two were loaded with hay and the other five with miscellaneous goods. At the Colliery Junction I had to pick up one loaded and six empty waggons which were standing behind the warehouse. We usually do the shunting inside the sidings, but on this occasion I could not get my train in because a mineral train was standing there. I put my van brake " on " to hold the train, none of the waggon brakes being down, and the road waggon in front of the train was taken by the engine into the siding. We arrived at the cabin about 5.9, the accident happening about 5.20. We had four shunts to make, and it would take more than five minutes to load and unload the road waggon. We had not quite finished our work when the accident happened. When I first heard the whistling of the approaching train, I thought it was an engine at the colliery. I did not see the signalman trying to attract our attention. We were behind the warehouse. The three leading waggons of my train were knocked forward about three-quarters of a mile, and seven were more or less destroyed, also the van.

*George Ralton* states : I have been 24 years in the Company's service, eight or nine years a driver. On the 27th December I came on duty at 12.45 p.m., to work until about 12.45 a.m. on the 28th. After the accident I went back along the 2.10 p.m. train, on the right hand side (as it was running). I found the brakes properly pinned down on two loaded waggons, but the pins were out and the brake handles loose on the two empty cattle waggons. I was called away, and I did not examine the other side of the train. I think they were all double brakes.

## *Conclusion.*

The circumstances attending this collision were as follows :—

A goods train arrived at Ryhope Colliery Junction at 5.10 p.m., where it was brought to a stand at the down home signal. The engine and the waggon next to it were uncoupled, and went away into the sidings on the up side of the line, for shunting purposes, leaving 11 waggons and a brake van standing on the main line. It appears from the evidence that the train is usually placed in the sidings, while the shunting operations are in progress ; but it could not be so disposed of on the occasion under consideration, as there was no room for it, owing to No. 1 siding being already occupied by a mineral train.

At about 5.10 p.m. another down goods train (2.10 from Hartlepool) arrived at Seaton Bank Head cabin, 2¾ miles south of Ryhope Junction. Here the train came to a stand, in accordance with the rules, to enable the guard to pin down waggon brakes before descending the steep gradients of Seaton Bank. The train had 22 laden and five empty waggons, and the Company's instructions would appear to require five brakes only to be pinned down on the laden waggons in favourable weather. Guard Fox says he pinned down five brakes as above, and also the brakes on two empty cattle waggons at the tail end of the train. The driver states that he had to give his engine steam to start the train, but that he closed the regulator again before the whole of the waggons were on the incline. Very shortly after passing through Seaton station, which is only half a mile below Bank Head, when on the falling gradient of 1 in 44, he realized he had lost control of his train. Although the engine and tender brakes were applied, the sand valves were opened, and the engine was reversed, the train is stated to have continued to gain speed for a time, without however attaining any very high rate of speed. Passing through Ryhope station, about two miles from Seaton, where the inclination of the line is rather easier, on a curve of 20 chains radius, the trainmen think speed was reduced somewhat; here, all signals were against them, and after running about 300 yards further the collision took place, with the results detailed above. The driver and fireman stuck to the engine, and escaped with comparatively trifling injuries.

A minute or two before the accident the signalmen in both Ryhope station and Colliery Junction cabins heard the whistling of the approaching train, and had the engine of the first train been attached, at the time, it is probable that the latter would have been got out of the way sufficiently to enable the second train to have been pulled up without any harm being done.

The driver of the 2.10 train, Thomas Handisides, has 22 years' experience, and he is thoroughly acquainted with Seaton Bank and the working of all classes of trains; he was driving a powerful engine, fitted with the Westinghouse brake, all wheels of the engine and tender having brake blocks. When the train had once overpowered him, on such gradients, he could scarcely hope to do more than prevent it from gaining speed, until the bottom of the steep incline was reached (Ryhope Colliery Junction); it was therefore of vital importance not to put off the application of the engine brakes until the train was already "out of hand," and he clearly committed an error of judgment in this respect. He attributes the accident, primarily, to an insufficient number of waggon brakes having been pinned down by the guard, who is, by the Company's rules, solely responsible for that important part of the working on the incline.

A circular issued from the office of the Superintendent of the line, dated September 22, 1897, lays down the number of brakes to be pinned down, in favourable weather, to ensure safe working down Seaton Bank: "for 21 laden waggons, five brakes must be pinned down." In wet weather, or when the rails are in a greasy state, the guards are instructed "to pin down additional brakes as they consider necessary to ensure safe working." The guard of the 2.10 train, George Fox, was, like the driver, thoroughly accustomed to the duties he had to perform on this occasion; as already explained, he says he pinned down five brakes on the laden waggons, three being on one side of the train and two on the other, and, in addition, two brakes on the empty waggons at the tail of the train. Some little time after the accident he examined his train, when he found that two brakes which he had secured at the top of the bank had been released; it is of course impossible to say whether the pins had not been pushed quite home in the first instance, or if they had shaken out during the journey or as the result of the collision. I think it must be admitted to be a general feature of similar accidents that some of the waggon brakes are released whilst running, and the pattern of brake in ordinary use is undoubtedly capable of considerable improvement in this and other respects. The driver of the train run into examined the other train on one side, but not on both sides, and his evidence is to the effect that the brake handles on one of the laden, and on the two empty, waggons were loose.

It will be noticed that the trainmen speak of a wet mist, blowing across from the sea, and I am therefore inclined to think sufficient allowance was not made by the guard for the probable state of the rails at the time. The number of brakes ordered to be pinned down—viz., five—on a heavily-laden train of 22 trucks, could leave but a small margin, if any at all, for defective brakes or any unfavourable conditions, and I feel considerable doubt whether the circular does not err in fixing the number so low, although no previous difficulty seems to have been experienced.

Passenger trains are not allowed to leave Seaton station for Ryhope until the line is clear at the Colliery Junction, and I understand that, in future, the same rule will apply to goods trains, which will be a distinct improvement on the mode of working (goods) hitherto in force.

I have, &c.,
G. W. Addison,
*Lieut-Col., R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

## APPENDIX.

### Particulars of Damage to Engines.

Engine No. 232, 2.10 train.—Front beam broken off; frame bent; left-hand sand-box stripped; wheel cover, and footplating nearly the whole length of the engine, stripped; hand-rail on boiler side torn off; tender axle-box and horn-plate of centre wheels broken; centre axle of tender slightly bent.

Engine No. 860.—No damage.

### Particulars of Damage to Waggons.

North-Eastern goods van No. 66.—Destroyed.

North-Eastern goods waggon No. 33,005.—Destroyed.

North-Eastern goods waggon No. 39,088.—Destroyed.

North-Eastern goods waggon No. 61,214.—Three end deals broken, and four buffer-pistons bent.

North-Eastern goods waggon No. 37,831.—Two axle-boxes and bottoms, two head-stocks, one end deal, and one top-plate, broken.

North-Eastern goods waggon No. 70,537.—One axle-box and bottom, two horns, and one upright stay, broken.

North-Eastern timber waggon No. 18,706.—One end stay broken.

North-Eastern low goods waggon No. 26,977.—One sole, one side deal, two end deals, two head stocks, four end stays, and two iron knees, broken.

North-Eastern goods waggon No. 24,231.—Two soles, two head-stocks, one sheath, four diagonals, four end and four side deals, two buffer pistons, one buffer-socket, and three end stays, broken; also two buffer pistons bent.

North-Eastern goods waggon No. 29,037.—Four end deals, two diagonals, one sole brake-gear, one sheath, three end stays, one buffer-piston, four horns, and one axle broken; and one axle bent.

Printed copies of the above Report were sent to the Company on the 25th February, 1898.

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## NORTH STAFFORDSHIRE RAILWAY.

Board of Trade, Railway Department,
8, Richmond Terrace, Whitehall, London, S.W.
August 9th, 1897.

Sir,

I have the honour to report for the information of the Board of Trade, in compliance with the order of the 23rd July, the result of my enquiry into the accident that happened on the 15th idem, at Newcastle-under-Lyme, on the North Staffordshire Railway.

In this case, as the 5.22 p.m. train from Newcastle-under-Lyme to Stoke was starting from the former place it left the rails at the points at the east end of the station, and one of the carriages struck the buffer-stops at the end of the siding, which is adjacent to the main line.

No one was injured, as the train was travelling slowly at the time, and was immediately brought to a stand by the driver, when he saw what had happened.

The train consisted of a four-wheels-coupled tank passenger engine, running chimney in front, and six coaches, viz.: a third-class brake (next the engine), three composites, a third-class carriage, and lastly a third-class brake, all being four-wheeled vehicles, except the third-class carriage. The train was fitted throughout with the automatic vacuum brake, which was in working order.

The engine was uninjured, and the damage to rolling-stock was not great, the worst case being that of the carriage which struck the buffer-stop, and which had two footboards and one door broken, both draw-bars bent, and one pair of wheels indented.

The permanent way had four chairs broken and the stretcher-rod and plunger-bar of the points on the main line bent, and the stop-block in the siding was knocked down.

For details of damage to stock, *see* Appendix.

### *Description.*

The line through Newcastle-under-Lyme and towards the west of it is double, but from the east end of the station towards Stoke the line is single. The station has two platforms, and the signal-box is at the west end of the up platform. The junction between the single and double lines is about 70 yards from the east end of the station, and at the fouling point between the two lines there are trailing points on the up line (*i.e.* the line from Stoke towards Market Drayton) leading into a short siding.

The points on the single line are provided with a facing-point lock and locking-bar, and the up home signal is placed alongside the points and interlocked with them. The siding points on the up line have recently had a facing-point bolt fixed to them, but without a locking bar, and there is a disc signal to control the movement of trains in the wrong direction from the up platform on to the single line.

The distances from the signal-box to the points on the single line and the siding-points on the up line are 125 yards and 80 yards respectively.

In addition to the trains passing through this place from Stoke on their journey westwards, there is a local service between Stoke and Newcastle, and it has become the custom for those trains which turn back at Newcastle to start on the return (or down) journey to Stoke from the up platform.

## *Evidence.*

*Samuel Mold* states: I have been driver for 22 years on the North Stafford Railway. On 15th July I was driver of the 5.22 Newcastle to Stoke passenger train. I received the signal from the guard to start the train. I applied steam to my engine, and we had arrived at about the points when the guard applied the brake in the van, and stopped me. I stood by the regulator, and I said to my mate "Look out for the guard when he is ready again," and my mate got on the step for that purpose. Then he said "Right away again." We were travelling engine first, and it was on the right hand step of the engine that my mate looked out for the signal from the guard. When I started again, and where I generally look out, that is to say, against the stop block, as far as I can tell, I heard something like timber breaking as if something was wrong, and I saw the coaches go down the Slip. I stopped as soon as I could by applying the brake and shutting off the steam. My engine and third-class van next the engine was on the main line. I hooked off the third-class brake from the remainder of the train, and when the passengers were put in I went forward to Stoke with them. The staff was given to my fireman whilst the engine was running round the train. When I started the points were properly set and the disc off. When the guard stopped the train the engine would be over the heel of the points. We only stood about half a minute after being stopped by the guard. I always look back to see whether the doors are right because of the tunnel. From the point I look back I have a full view of the train. I came on duty at 6.30 a.m. to work till 6.9 p.m. My engine was a tank passenger engine, four wheels coupled, and it was fitted with the vacuum brake. After the accident I went back and saw the disc signal, it was then off for the train to start.

*Charles Hopwood*, fireman: I have been with the Company 16 years, and have been fireman for eight years. I have heard the driver's statement read, and corroborate it. I came on duty at 12.25 p.m. to work till 9.9 p.m.

*John Orwell*: I was signalman on duty at Newcastle signal cabin when the mishap occurred to the 5.22 p.m. Stoke train. The train arrived at the down platform from Stoke at 5.17. I turned the engine across the road to run round the train as usual. When the engine had run clear of the points for the purpose of getting round, I did not touch the levers again except to pull the disc off for the train to go out of the station. I saw the guard give the signal to the driver to start, and I saw the train start and then stop again. What called my attention to this was that the guard called out that there was a door open, and he said, "I shall have to stop if you don't shut the door." He called this out to the station staff. I was standing by the window when I heard the guard call out. For the train to go forward from the down platform, the movements of my levers are as follows:—No. 15 point lever, which works both ends of the cross-over road, viz.: facing and trailing points; then No. 16 lever, which works lock bar at trailing points and plunger at facing points (leaving Newcastle); lastly, No. 14 lever, for the disc signal. To reverse, I should have to put back Nos. 14, 16 and then 15. I asked for the release of the electric staff while the engine was running round the train. I cannot say positively when I gave the "In Section" signal, but I think I gave it at the same time as I gave the "Is Line Clear" signal. I did not leave the frame to book the train. I booked it when I saw the train was off the road. I always watch the tail end of the train out of the station to see the tail lamp. I did not touch the levers of the points after making the road for the train to leave the station. I came on duty at 1.0 p.m. for platform work, and as a signalman took charge at 3.0 p.m., to remain in the box till 11.20 p.m. When the train was started the first time and also the second time, I was in conversation with brakesman Habberfield, who was standing on the platform, and I was standing at the window. I distinctly deny that I touched the levers, and cannot account for the train getting off the road. I have been in the Company's service 21 years, the whole of the time as a signalman at Newcastle. After the accident I asked the station master to come and see the position of the levers in the signal cabin. I have known an engine come off at the same points; this would be over nine years ago. I am not sure whether this was before the plunger was fitted to the points or not. It was a very hot day on the 15th July.

*Charles Land*, passenger guard: I have been in the Company's service 24 years, and I have been guard 17 years. On the 15th July I came on duty at 8.15 a.m. to work till 8.10 p.m. I was guard of 5.22 Newcastle to Stoke train on 15th inst. We left Newcastle at 5.22. I received the signal from the station-master to start and passed it on to the driver. Just as I was getting into my van I noticed that the handle of one of the doors was straight up. I called out to the men on the platform: "Why don't you shut that door." Mr. Holbrook at the same time signalled to me to stop the train. I got into my van and applied the vacuum brake and stopped the train thereby. After we had stopped, two more passengers got into the train, and after the door referred to had been closed, I got a fresh signal from Mr. Holbrook to start, and gave the signal to the driver. When we started again, I perceived that we were off the road. My van did not leave the road at all, nor did the vehicle next the engine, but the other four carriages were off the road. It is the usual practice for this train to start back to Stoke from the down platform. I have not known a passenger train get off at these points before. I cannot say at what speed we were travelling when the train went off, but it would not be any great speed. No one complained to me of any injury, but one lady fainted. I assisted in getting the passengers out of the train, and put them into the third-class brake next the engine, which was still on the road, and took them on to Stoke. My train was composed as follows:—Third-class brake (next the engine), three composites, a third-class carriage and a third-class brake. All were four-wheeled vehicles, except the third-class carriage, which was a six-wheeler.

*Mr. Holbrook*, station-master, states: I was on the platform at Newcastle-under-Lyme when the 5.22 p.m. train for Stoke started. I gave the signal to the guard to start, when I heard a cry from the guard that a door was open. I immediately gave him the signal to stop, and he did so. Two passengers then got into the train, but it was not stopped specially for them. My object in stopping the train was to prevent the door being smashed in the tunnel. After the train started again it left the road, and directly afterwards was stopped a second time. After the mishap one of the passengers complained to me of being thrown against the side of the compartment and having hurt his cheek bone. No one else complained of being injured, but one lady fainted. She recovered, and went forward to Stoke. All the passengers, with the exception of about half a dozen, went on to Stoke in the third-class brake coach. I cannot say definitely how the accident occurred, but my opinion is that the points had been moved while the train was on them. After the train stopped the second time, I found the coaches in the following position: The engine and coach next to it were on the single line outside the points, the next carriages, composites Nos. 258 and 282, were off the road, while composite No. 257 had all its wheels on the road, in the siding. The next carriage, No. 131, was in the siding with its leading and trailing wheels off, and its centre wheels on, and the last vehicle was on the rails on the proper road. It is the practice to start this train from the down platform, on account of the small margin of time between its arrival and departure. Three or four minutes after the accident the signalman called my attention to the position of the levers working the points; they were then in proper position for the train to go away, and the points appeared to fit all right.

## *Conclusion.*

This accident occurred under the following circumstances:—

The train arrived at Newcastle-under-Lyme at about 5.18 p.m. The engine was at once uncoupled and ran round the train, ready for the return journey to Stoke, the interval of time between the arrival and departure of the train being only four minutes. It is usual for this train to start back from the up platform at which it arrives. At 5.22 p.m. the signal was given by the station master and guard for the train to start, but as soon as it had got into motion, the guard noticed that the door of one of the carriages was open, and he therefore stopped the train by applying the vacuum brake from his van. The train was thereby brought to a stand with the engine a few feet past the siding points at the east end of the platform, the carriages being still alongside of the platform. As soon as the door was closed the train made a fresh start, but when the engine reached the points on the main line, the driver noticed that the carriages, instead of following the engine, had gone along the siding, the train being "split." He therefore stopped the train a second time, as quickly as he could, and its position was then found to be as follows:—The engine and coach next to it were on the single line outside the points; the next carriage was standing diagonally across the space between the main line and the siding, its front end being in the four-foot way of the main line, and its rear end being jammed up against the stop-block of the siding; the next coach had its leading wheels off the rails; the next was on the rails in the siding; the next (a six-wheeler) had its leading and trailing wheels off the rails of the siding, and its middle wheels on; while the last vehicle had all its wheels on the rails of the proper line.

Fortunately, none of the carriages were upset, and no one was hurt, though some of the passengers were naturally alarmed. No couplings were broken, though several were badly strained and bent. After the accident the points were found to be uninjured and in good order, and the damage to the permanent way was trifling.

The accident must clearly have been caused by some movement of the siding points, which are "facing" to a train travelling towards Stoke, during the passage of the train over them. The absence of any mark on the switches, and rails adjacent to them, is sufficient proof that the wheels did not mount the rails, while the existence of the facing point bolt would render it impossible for the pressure of the engine wheels against the switch rails to cause the thin ends of the switches to spring open. But in the absence of a locking bar, there was nothing to prevent the signalman from withdrawing the bolt by operating the lever which works it in the signal-box, and from moving the points themselves in the intervals between the passage over them of each successive pair of wheels.

There is no doubt that when the driver first started from the platform, the points were right for the main line, and the disc signal "off," and signalman Orwell denies having touched the levers until after the accident. But the facts afford strong evidence that the points were moved, and I have little doubt that Orwell, having allowed the usual time to elapse for the train to get clear of the points, and not having noticed that it had been stopped by the guard on account of the open door, reversed the points at the moment that the train was making its second start, and caused the wheels of the second carriage to "split," the front wheels taking the proper road and the rear wheels the siding. It is probable that after he had done this the rattling of the levers in the frame drew Orwell's attention to the fact that something was wrong, and that he then pulled over the point lever again, thereby allowing the rear vehicle to take the proper road, after the middle of the train had gone along the siding.

This view of the case is supported by station-master Holbrook, who was on the platform at the time, and who, therefore, had a good opportunity of ascertaining the probable cause of the accident.

The responsibility for the mishap, which might have been attended by very serious consequences, must, I think, rest upon signalman Orwell, who had been on duty in the signal-box 2 hours and 20 minutes.

A certain amount of excuse may be found for Orwell in the fact that the points were not provided with a locking bar, which would have rendered it impossible for the bolt to be withdrawn and the points moved during the passage of the train over them.

There seems to be no objection to the practice of starting local trains to Stoke from the up platform, when, as in this case, the interval of time between arrival and departure is short. But for this purpose the siding points should be fitted with a locking bar, as well as a bolt, and a proper starting signal is also necessary, and the Company were in the wrong in having adopted the practice without having first provided these appliances. It is probable that when the station was originally signalled, the custom referred to was not in existence, and that it has grown up of late years owing to an increase of traffic. I was told that the Company now intend to supply the deficiencies, and it is to be hoped that they will lose no time in so doing.

I have, &c.,
H. A. Yorke,
*Lieut.-Col., R.E.*

The Assistant Secretary, Railway Department,
Board of Trade.

## APPENDIX.

### Particulars of Damage done to Rolling-Stock.

Composite, No. 258.—Two long step-boards broken; one door-rail broken; one door-light broken; one door-panel broken; two bent draw-bars; three step-irons bent; one pair of flanges indented.

Composite, No. 282.—One draw-bar bent; one shackle strained; brake adjusting-rod strained.

Composite, No. 257.—One draw-bar bent.

Third-class coach, No. 131.—Two draw-bars bent; one shackle bent; brake work displaced.

Brake, No. 235.—One axle-guard bent; one draw-bar slightly bent.

Printed copies of the above Report were sent to the Company on the 23rd August.

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## SOUTH-EASTERN RAILWAY.

Board of Trade (Railway Department),
8, Richmond Terrace, Whitehall, London, S.W.,
15th August 1897.

Sir,

I have the honour to report for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 27th ult., the result of my enquiry into the circumstances attending a collision, which took place on the 20th July at Borough Market Junction, between London Bridge and Cannon Street stations, on the South-Eastern Railway.

In this case the 10.3 p.m. up passenger train from Maidstone, consisting of engine and tender and 16 vehicles, and an up paid special train from Chatham, consisting of tank engine and 8 vehicles, both having to run to Charing Cross direct, approached Borough Market Junction from London Bridge station simultaneously, on the west and east up lines respectively, the signals being off for the east line, and came into collision at 12.8 a.m., on the 20th July, at the fouling point of the junction between the east and west lines.

The Maidstone train was rather in advance, and the engine of the special train struck the third carriage from the front of the former train, and was, with the two vehicles behind it, thrown off the rails, foul of the down line, the Maidstone train running forward to Waterloo station before it was stopped.

Four passengers in the Maidstone train complained of having been shaken, and the rear guard of the train was slightly injured.

There was considerable damage to the rolling stock in the special train, and to the sides of the carriages in the Maidstone train. (For particulars see Appendix.)

## *Description.*

Between the north end of London Bridge station and Borough Market Junction, the next block post towards Cannon Street, there are three lines of rails, viz., the down main line on the east side, the east up line in the middle, and the west up line on the west side.

These two up lines are continued towards Cannon Street from Borough Market Junction, and north of this junction there are two down lines also. At Borough Market Junction the double line to Charing Cross diverges to the left, or west, and there are connections with both the up lines, so that the tracks for trains running direct to Charing Cross from London Bridge on the east and west up lines converge at this point, and run out on the single up line to Charing Cross. The only signals to which it is necessary to refer are the up signals worked from Borough Market Junction cabin.

The up distant signals are four in number, and they are carried on a bracket post on the proper side of the line, about 126 yards north of London Bridge main platform. The two right-hand arms apply to the up east road, and the two left-hand arms to the west road, the higher arm in each pair being for Charing Cross, and the lower for Cannon Street. The up home signals are on a gantry close to the junction points, and they also are four in number, and are grouped exactly like the distant signals.

There is a good view of these signals for most of the way from London Bridge, although they are hidden for a short distance by a high girder.

The point of collision was at the fouling point of the converging east and west up lines for Charing Cross direct.

Absolute block working is in force on these lines under the rules in use on the London district of the South-Eastern Railway. Under these rules trains are not blocked back at junctions, but converging trains are allowed to run up to the junction signals.

The following distances northwards from the north end of London Bridge down main platform should be noted:—

| | |
|---|---|
| To E.F. signal cabin ... ... ... ... ... | 71 yards. |
| „ Borough Market Junction up distant signals ... | 126 „ |
| „ „ „ „ signal cabin ... ... | 336 „ |
| „ „ „ „ up home signals ... ... | 347 „ |
| „ the junction points ... ... ... ... ... | 351 „ |
| „ the point of collision ... ... ... ... ... | 377 „ |

The Maidstone train had run for about 380 yards from London Bridge up platform to the point of collision.

The line is on a rising gradient of 1 in 93 through the station to New Borough Market up distant signals, it then rises on a gradient of 1 in 119 for about 120 yards, and then falls on a gradient of 1 in 153 to the point of collision.

## *Evidence.*

*Henry Harvey* states: I have been 47 years in the service as a signalman. I have been all the time at London Bridge. On the 19th July I came on duty in E.F. cabin at 10 p.m. for eight hours. There are thirty-six working levers in the cabin. We work absolute block under the rules which have always been in force in the London District The 10.3 p.m. up passenger train from Maidstone, due at London Bridge at 12.2, and to proceed to Charing Cross direct, arrived at No. 2 platform, west road, at 12.5. I signalled it to Borough Market at 12.6. The block instrument was standing clear, having been put to clear after the Greenwich train had passed at 11.55. I gave the train on, and described it on the train describer as a Dartford loop train for Charing Cross direct. That train was not cleared for some hours. A paid special train was signalled to me from C.D. cabin at 12.4 a.m, on No. 3 road, east line, which was clear at the time to my cabin. I signalled it on to Borough Market at 12.6. I signalled the special on first, before the regular train. The east line block instrument from Borough Market was standing clear at the time, having been clear since 12.1, when an engine had passed. The train did not stop, and it passed me at 12.7 a.m. I described it to Borough Market as a Dartford loop train for Charing Cross direct. It had come from Chatham at 11.7. The Borough Market up distant signals are close to my box. The distant signal for the east road, direct to Charing Cross, was lowered for the special, and I could see that the home signal at Borough Market was also off for that train. It is in accordance with our rules and practice to allow trains on the east and west roads to run up to Borough Market signals at the same time. In my opinion it would cause a very serious delay to work otherwise, or to introduce strict junction block working, and keep one train back. I think the delay would be so great that it would cause a block to the traffic sometimes. Most trains stop at London Bridge station. The midnight down Mid-Kent train from Charing Cross district was given on to me from Borough Market at 12.6, and passed me at 12.8.

*Charles Wood* states: I have been 32 years in the service, and about 29 years a signalman. I have been 26 years working at Borough Market. There are 25 working levers in the cabin. We work block under the ordinary rules for the London District, between my cabin and E.F. cabin, Cannon Street District Junction, on the Charing Cross road, and No. 2 Cannon Street on the Cannon Street road. I have a booking boy to assist me. Trains are allowed to approach on converging lines up to the home signals, and one of them is not kept back. It would cause very great delay to do so. On the 19th July I came on duty at 10 p.m. for eight hours. After a Greenwich train had passed to Cannon Street off the west road at 11.55, that road stood clear to E.F., and after an empty train had passed to Cannon Street off the east road at 12.1, that road stood clear to E.F. At 12.6 a.m. a special train for Charing Cross direct was signalled to me from E.F., and I signalled it on to Cannon Street West Junction, and pulled over No. 17 points, and lowered my home and distant signals for the east road to Charing Cross. Immediately after this the 10.3 p.m. up Maidstone train was signalled to me from E.F., also for Charing Cross direct on the west road. I kept my signals for that road at danger, and did not signal the train on to Cannon Street West Junction. The two trains approached on the east and west lines at the same time, the regular train being a little ahead of the special. It was a fine clear night, and the signals were burning properly. At first I only saw one train coming, which I thought at first was the special on the east road. It is difficult to tell at night which road a train is on, coming round the curve. I thought it was all right. I walked across the cabin to put up my down signals behind the midnight Mid-Kent down train, which had just passed. This train had been signalled to me from Cannon Street West Junction at 12.6, and passed me at 12.8. On turning round I saw that the up train which was passing was the regular up Maidstone train on the west line, and not the special on the east line, as I had thought. The engine of the up Maidstone train was just past my cabin, running at 12 or 15 miles an hour, I should say; about the usual speed for a train starting from London Bridge with clear signals. The engine of the special was a little behind—two or three lengths behind—on the east line. This train was running at about the same speed. Both engines had steam on, I think. I at once put my home signals to danger, before the engine of the special had reached it, and my booking boy, who was nearest to the window, went and shouted to the driver of the special. This driver at once pulled up, but was too near the other train to avoid the collision, which took place at about 12.8. It seemed to me that the side of the engine of the special train was struck by the sides of the Maidstone carriages about half-way along the train. The trailing end of No. 17 points was run through by the Maidstone train, which went right away to Waterloo. The engine and two carriages (I think) in the special left the rails.

*William Heasman* states: I have been 16 or 17 years in the service, and a driver for 18 months. On the 19th July I came on duty at 3.50 p.m. at Bricklayers Arms. I was working the passenger service on the North Kent line, my first train being the 6.17 p.m. down train, and the last train the 10.3 p.m. up train from Maidstone. I should have left duty at about 1 a.m. to 1.30 a.m., after getting back to Bricklayers Arms light from Charing Cross. My engine (No. 276) is a six-wheeled engine, with the driving and trailing wheels coupled, and a six-wheeled tender. It is fitted with an automatic vacuum brake working blocks on the coupled wheels of the engine, and the six tender wheels. I left Maidstone at 10.3 p.m. with a train of 16 vehicles, and the vacuum automatic brake working throughout. Everything went all right on the journey, the train stopping at all stations. We left London Bridge at about 12.6 on the west road, having run into No. 2 platform line at London Bridge. The proper signal was off for me to start from No. 2 line on to the west line, and I proceeded. Sometimes this train runs in on No. 1, sometimes on No. 2, and sometimes on No. 3. When on No. 2 we sometimes go forward on the east line, and sometimes on the west line. I had to reverse three times before I could start my train, and the last time I broke the draw bar between the front brake-van and the rest of the train. The train was coupled up with the side chains, and then I started. I did not see the special at all. I went towards Borough Market, and thinking I was on the east road, I took the signals which were off for that road. I think my speed on passing Borough Market Junction box was about eight or nine miles an hour. I went on to Waterloo, and it was not until I stopped that I knew anything had happened. The guard came and told me. I felt a slight snatch at the Junction, but nothing unusual, and I put it down to the train being coupled up by the side chains only. Both I and my mate looked back, over the right and left sides respectively, but did not see anything was amiss I did not feel anything when running through the points. I just made a mistake.—The signals were plain enough.

*Alfred Barnes* states: I have been nearly five years in the service, and a spare fireman for about two years, or 18 months. On the 19th July I was fireman with driver Heasman. I have heard his evidence read over, and it is correct. I knew we were on the outside road, but I am not myself well acquainted with the signals. I have mostly been working with goods trains, which do not run past London Bridge, and I am not thoroughly acquainted with the signals. I trusted to my driver knowing the signals all right.

*Alfred Charles Bridger* states: I have been about 17 years in the service, and a spare driver since April last. On the 19th July I came on duty at Strood at 5 p.m. During the day I was working locals between Strood and Chatham. My turn of duty should have ended at 12.30. At about 11.7 I was detailed to take a special from Chatham to Charing Cross direct. My engine (No. 82) is a bogie tank engine, with a trailing bogie, and leading and driving wheels coupled. It is fitted with an automatic vacuum brake working blocks on the coupled wheels. We left Chatham at 11.13, running chimney first, and with three vehicles on. We had a clear run the whole way, and never had a signal against us. We ran through London Bridge on No. 3 line, and along the east road to Borough Market. The signals were off for me to run direct to Charing Cross. I did not notice any train on the west road, nor did I see any train on the down line. I think my speed when approaching Borough Market was about 10 miles an hour. As I was nearing the signal it was thrown to danger, and I heard someone shouting from the signal cabin. I looked out on the left side—my fireman's side—and saw a train on the west road moving forward, rather slower than we were, I think. Directly the signal was thrown up I put my automatic vacuum brake on, and it acted well. My steam was off at the time. I had shut it off the other side of London Bridge. My engine struck the side of the other train, and left the rails, coming very quickly to a stand. The two leading vehicles were also off the road, but were not upset. I was not injured.

*John William James Eversfield* states: I have been 14 years in the service, and a fireman about six years. On the 19th July I was fireman with driver Bridger. I am well acquainted with the signals at London Bridge. After we had started I saw the train on the west road moving forward, but we were going faster. I thought the other train would come to a stand at Borough Market signal. I could not see the engine. Just then, at the signal cabin, my driver said to me "Why, Jack, he is right off"—meaning that he was not going to stop. At that moment the signal was thrown up, and my driver put on the brake. The brake was well on before the collision took place. I did not notice any down train. I got a slight bruise on the right arm, but have not been off work.

*Robert Beadel* states: I have been 11 years in the service, and 9 years a guard. On the 19th July I came on duty at 3.56 p.m. at Maze Hill, to work till 12.12 at Charing Cross. I would go home as a passenger. I was front guard of the 10.3 p.m. up train from Maidstone, which left at right time. There were 16 vehicles on, but very few passengers in the train after leaving London Bridge. We left London Bridge at 12.6 on the west road, and ran forward at about 8 miles an hour to Borough Market Junction. I did not see the Borough Market distant signals, but I saw that the home signal for the west road direct to Charing Cross was at danger. Before starting from London Bridge station, the draw-bar hook at the back of the leading van, in which I was riding, broke off, and we had to couple the train up with the side chains. When going forward I was a little anxious about the chain holding coming round the curve, and I kept looking back two or three times to see if all was right, then looking forward at the signal, believing all the time that my driver would stop at the signal. The last time I looked forward, after looking back along the train, I began to fear he would not stop. I was then nearly under the signal and the engine was past. I might have applied the continuous brake and have pulled the train up, but I thought it better not to do so. My engine was already past, and if it had stopped the signalman would possibly have thought it had stopped clear at the signal, and then he would not have put the signal to danger against the other train, whereas if he saw our train going forward, he would know that something was wrong. Besides this, I had not seen the other train, although I saw the signal off for it, and I thought that by going forward we might run clear. We were running at about 8 miles an hour. I did not see or feel the collision, and did not know it had happened until we got to Waterloo, when on going along the platform I saw that some of the sides of the carriages were damaged. The third carriage from the engine was the first struck, and all behind were struck. No passengers were injured. Four passengers in a first-class carriage complained, but I think they were only frightened. One gentleman wanted to get out, but I could not let him out as the handle was off the door.

*George Collier* states: I have been over 17 years in the service, and a guard over 14 years. On the 19th July I came on duty at 3.56 at Maze Hill, to work till 12.12 at Charing Cross. I was head guard of the 10.3 p.m. up train from Maidstone. It was made up as follows:—Engine and tender, third-class brake carriage, 2 third-class, 6 composite, 3 third-class, and third-class brake carriage, in which I was riding. Behind these were a luggage van and two carriage trucks. The vacuum automatic brake was working throughout. We left London Bridge on the west road. I saw the Borough Market distant signal at danger, but I did not see the home signal. It cannot be seen from the rear of the train until the engine has passed the signal. The first I knew of anything being wrong was when I was thrown down on the floor, and was rather bruised. When I got up we had passed Cannon Street West Junction, and the signals were right for running forward, so we went on to Waterloo. I knew we had been in collision, and the side of my compartment was smashed in. I did not think of pulling up the train. I looked along the train, and so far as I could see there was no vehicle off the rails. I was rather stupefied. No passengers were injured. After starting from London Bridge I was booking the damage to the draw-bar hook. I did not see the other train on the east line. I heard something passing, but I did not know what it was. The Borough Market home signal can be seen from the rear van of a train before leaving London Bridge, but after starting it is hidden by the girder of the bridge. I spoke to my driver, and he was not in liquor.

*Henry Harrison* states: I am a porter at Strood, and have been over 3 years in the service. I sometimes work as guard. On the 19th July I came on duty at 1 p.m. to work till 1.45 a.m. I have half-an-hour for tea and half-an-hour for supper. These are my regular hours for every other week on week days. At about 11.5 I was detailed to take a special train from Chatham to

**Charing Cross. We started at about 11.13 with a train made up as follows:—Tank engine, second-class, first-class, and brake third-class. We had a clear run to London. As we were running from London Bridge to Borough Market I saw another train running on the parallel line. The signals were off for us, and I thought the other train was going to stop, so I took no steps to stop my train. Just as my van was opposite to the Borough Market signal cabin my driver put the brake hard on, and the collision took place almost immediately. The signalman had thrown the signal up, but it was too late for us to stop. The engine and the two leading vehicles left the rails, and the two carriages were badly damaged. There was only one passenger and he was not injured, nor was I. I know the signals at this part of the line.**

## *Conclusion.*

This collision, the consequences of which were, fortunately, not serious, was due to a mistake of William Heasman, the driver of the 10.3 p.m. up passenger train from Maidstone, who, when approaching Borough Market Junction from London Bridge on the west up line, took the signals which were off for the parallel east up line, having, in some unaccountable manner, got the impression that he was upon the latter line.

The 10.3 p.m. train had stopped in ordinary course at London Bridge, and had to run direct to Charing Cross, and the special train from Chatham, also for Charing Cross direct, ran through the station at London Bridge, and was approaching Borough Market Junction on the east up line with the signals off, and gradually overtaking the Maidstone train. It was a dark night, and neither driver saw or, at any rate, took any notice of the other train, and, as both drivers took the same signal, the trains came into collision, as described above at the fouling point of the junction of the east and west lines at Charing Cross ; a second collision between a down train, which had just passed, and the derailed special train, which was thrown on to the down line, being escaped by a hair's breadth.

The coupling between the front brake carriage of the Maidstone train and the next carriage behind it had snapped when the train was starting from London Bridge, and this train was coupled up by the side chains only. This fact, and some difficulty which he experienced in starting his train, seem rather to have disconcerted the driver, and afford the only reason he can give for the mistake he made, and which he frankly admits in his evidence. The condition of the coupling is also put forward by the front guard to explain the fact of his not having seen the signal for the west line at danger sooner than he did. He says he was anxious about the side chains holding coming round the curve, and was looking back along the train to see if all was right, and that he did not see the junction home signal at danger until the engine of his train had passed it. For reasons which he gives in his evidence he decided that he had better not pull up his train at once by the application of the continuous brake, thinking that, as he had not actually seen the other train on the east line for which the signal was off, it would be better for him to let his train, already foul of the junction, run clear forward if possible, rather than stop on the junction.

I do not think that he can be blamed for acting as he did, and adopting what, in his judgment, was the wisest course, but I certainly think that, having missed seeing the Borough Market Junction distant signal, he might have seen the junction home signal sooner, if he had kept a sharper look out for it.

He did not know that the collision had occurred until his train got to Waterloo, the next station.

The head guard was in the rear van, and he saw the Borough Market up distant signal at danger, but from the rear van of a long train the junction home signal cannot be seen until the engine is close to or past the junction, and he thought naturally that the home signal must have been lowered for his train, and did not know that there was anything wrong until the collision took place, and he was knocked down in his van. He ought most certainly to have pulled up the train as soon as possible after the collision occurred, instead of letting it run on to Waterloo, as in the darkness it was quite impossible for him to see exactly the condition of affairs, although he knew that the side of his van had been smashed in. He excuses himself by saying that he did not get up until after the train had passed Cannon Street west cabin, and that he was rather stupefied by his fall.

The fireman of the Maidstone engine saw the signals at Borough Market, but states that he is not well acquainted with them, and trusted to his driver.

No blame attaches to the men with the special train, as it is a common thing for trains on the two up lines to run up to the junction together, one of them being stopped by signal.

The driver and fireman of the Maidstone train had, at the time of the collision, been on duty for 8¼ hours, and the two guards for about the same time.

This collision, like many others which have occurred, shows the risk of allowing two converging trains to run up to a junction at the same time, trusting to one of them being stopped by the home signal, which, of course, must on one line be at danger.

It is impossible to ensure that a driver, however careful and experienced he may be, will never make a mistake, and the only absolutely safe method of working at junctions is to block back one of two converging or crossing trains to the next block signal cabin.

Such working at Borough Market Junction would probably cause a certain amount of delay in some cases, and the officials of the line believe it would be impossible to carry it out. The sections are so short that I would hardly have thought this would be the case, although I have no doubt it would, looking at the amount of traffic, be difficult to work so; but I trust that the Company, having in view the narrow escape from a very serious accident on this occasion, and the fact that this is, I understand, not the only recent case of a driver taking the wrong signal at this junction, plain and clear though these signals are, will give the question their most serious consideration, and will, at any rate, give the system of blocking back at this junction a trial.

I have, &c.,
F. A. Marindin,
*Major*, *R.E.*

The Assistant Secretary,
Railway Department, Board of Trade.

## APPENDIX.

### Statement of Damage to Rolling Stock.

*Damage to Engine, No. 82 (of Special Train).*

Framing slightly damaged and buffer-plate bent.

*Damage to Stock in the Special Train.*

No. 880, first-class.—End and side of one compartment broken to pieces, two headstocks, one buffer-head, wood face and wood block, two step-boards, three door handles, one axle-box, one door panel, and one side panel, three quarter glasses, and two door glasses broken, five step-irons, and three brass commodes and one buffer-rod bent. Off the line.

No. 188, second-class.—Two wood buffer-blocks and faces, one stepboard, four side panels, four door handles, one axle-guard, connecting-rod and roof cornice broken, four brass commodes bent, and one corner pillar damaged. Off the line.

No. 467, third-class.—Two door handles, one corner board, one door panel, two side panels, and one stepboard broken, corner pillar damaged, two step-irons bent, three hand-rails pulled off and bent.

*Damage to Stock in the 10.3 p.m. Maidstone Train.*

Nos. 350, 351, 352, 353, 354, 355, composites: 375, 376, 377, 378, and 2187, third-class carriages.—The whole of these carriages had the whole of the side panelling, roof cornice, stepboards and irons, brass commode and door handles, door hinges, gas gauges, axle-boxes upon one side more or less seriously damaged.

No. 363, Grande Vitesse van.—Two stepboards and irons broken, and side of vehicle otherwise damaged.

Nos. 140 and 196, carriage trucks.—The two corner pillars and side plank to each vehicle damaged.

No. 2176, third-class.—One draw-bar hook broken.

Printed copies of the above Report were sent to the Company on the 10th September.

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RAILWAY ACCIDENTS.

# RETURNS

OF

# ACCIDENTS AND CASUALTIES

AS REPORTED TO THE BOARD OF TRADE BY THE SEVERAL RAILWAY COMPANIES
IN THE UNITED KINGDOM,

During the Year ending 31st December 1897,

In pursuance of the Regulation of Railways Act (1871), 34 & 35 Vict. cap. 78;

TOGETHER WITH

# REPORTS OF THE INSPECTING OFFICERS OF THE RAILWAY DEPARTMENT TO THE BOARD OF TRADE

UPON

# CERTAIN ACCIDENTS

Which were inquired into.

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Presented to both Houses of Parliament by Command of Her Majesty.

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HODGES, FIGGIS, & Co., LIMITED, 104, GRAFTON STREET, DUBLIN.

1898.